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### PROJECT DIRECTORY

### OWNER
Board of Governors of the Colorado State University System  
Colorado State University – Pueblo  
2200 North Bonforte Boulevard  
Pueblo, CO 81001-4901  
(719) 549-2361 Phone  

<table>
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<tr>
<th>Owner</th>
<th>Information</th>
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</table>
| John Barnosky | Director of Facilities Planning and Construction  
| john.barnosky@colostate-pueblo.edu |

### OWNER’S REPRESENTATIVE
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(719) 339-0528 Phone  
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<table>
<thead>
<tr>
<th>Owner’s Representative</th>
<th>Information</th>
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</table>
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<thead>
<tr>
<th>Architect</th>
<th>Information</th>
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</table>
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<thead>
<tr>
<th>Associate Architect</th>
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| craig@demmonstudios.net |
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   howards@technologyplus.com

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Lakewood, CO 80227
(720) 273-3224 Phone
(303) 380-0060 Fax
   Phillip Goddard
   phil.goddard@buildingcsi.com

END OF PROJECT DIRECTORY
SECTION 00 01 05

SEALS AND SIGNATURES

I hereby certify that the portion of this technical submission as described below was prepared by me or under my direct supervision and responsible charge. I am a duly registered Architect under the laws of the State of Colorado.

Discipline:  Architecture
Registration No:

Signature

Pages and Drawings covered by this seal:
Specifications Sections:

Drawings:

Date Issued:  7/20/2009

I hereby certify that the portion of this technical submission as described below was prepared by me or under my direct supervision and responsible charge. I am a duly registered Structural Engineer under the laws of the State of Colorado.

Discipline:  Structural Engineer
Registration No:

Signature

Pages and Drawings covered by this seal:
Specifications Sections:

Drawings:

Date Issued:  7/20/2009
I hereby certify that the portion of this technical submission as described below was prepared by me or under my direct supervision and responsible charge. I am a duly registered Professional Engineer under the laws of the State of Colorado.

Discipline: Mechanical Engineer
Registration No:

Signature
Pages and Drawings covered by this seal:
Specifications Sections:

Drawings:

Date Issued: 7/20/2009

I hereby certify that the portion of this technical submission as described below was prepared by me or under my direct supervision and responsible charge. I am a duly registered Professional Engineer under the laws of the State of Colorado.

Discipline: Electrical Engineer
Registration No:

Signature
Pages and Drawings covered by this seal:
Specifications Sections:

Drawings:

Date Issued: 7/20/2009
**SECTION 00 31 00**

**AVAILABLE PROJECT INFORMATION**

**PART 1 - GENERAL**

1.01 EXISTING REPORTS AND SURVEYS

A. Subsurface Investigation Report:
   1. A subsurface investigation (Soils) report has been prepared with respect to the project site:
      a. Title: "Geotechnical Investigation / Project C9103 / Academic Resources Center Remodel / Colorado State University – Pueblo / Pueblo, Colorado"
      b. Date: December 8, 2008.
      c. Prepared by: CTL Thompson, Incorporated. CTL/T Project No. SC02493-125

   2. A copy of this report is appended to this Project Manual.

B. Hazardous Materials Investigation Report:
   1. The Owner will contract to have hazardous materials abated before the commencement of this contract and has had a hazardous materials investigation report prepared with respect to the existing building:
      a. Title: “Design Specifications for Asbestos Removal at Colorado State University – Pueblo Academic Resource Center / Remodel and Demolition / Asbestos Abatement / Pueblo, Colorado”
      b. Date: November 26, 2008.
      c. Prepared by: Walsh Environmental Scientists and Engineers, LLC. Project No. 6483-010.

   2. View at the office of the Owner’s Project Manager.
   3. This report identifies asbestos, lead containing materials, and other hazardous materials in existing construction on the project site.
   4. This report, by its nature, cannot reveal all conditions that exist within the building. Contractors should be aware of the potential existence of hazardous materials not identified in the report.

1.02 ELECTRONIC DRAWING INFORMATION

A. CADD Files:
   1. Electronic Drawing Information (also known as Computer Aided Drafting and Design (CADD)) files and Building Information Model (BIM) files prepared in Revit for the Architectural and Structural portions of the building will be provided to the Owner by the Architect.

   2. CADD files and BIM files will be made available to the Contractor upon the execution of the Architect’s Standard Agreement for use of Electronic Media, copy of which follows this section.

   3. The Owner will copy and transfer the CADD and/or BIM files to the Contractor.
4. The Contractor will be responsible for the copying and transfer of the files to his subcontractors.
5. The Architect will replace the original transmitted electronic information in the event that the media is found to be defective.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION
STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAMS

INFORMATION FOR BIDDERS

Institution or Agency: Colorado State University - Pueblo
Project No./Name: C-9103/P-08025 / Academic Resources Center

1. **CONTRACTOR QUALIFICATION:** State projects of $150,000 or more, and under supervision of State Buildings Programs, require the Contractor to be registered with State Buildings Programs. Projects under $150,000 do not require qualification. A Contractor, to be qualified with State Buildings Programs, must annually file State Form SC-9.1, Contractor Statement of Experience, and be qualified at least two (2) working calendar days prior to the date fixed for publicly opening sealed bids. This form can be obtained by accessing our website: [www.colorado.gov/dpa/dfp/sbrep](http://www.colorado.gov/dpa/dfp/sbrep) (Click on the navigation button State Buildings, then Contractor’s Qualification/Registration Form and then the link below the second paragraph – Contractor Registration Form). Complete the form and submit electronically to State Buildings Programs.

NOTE: Vendors/Contractors who are registered with the State of Colorado, Department of Personnel & Administration/Division of Finance and Procurement/State Purchasing Office’s Bid Information and Distribution System (BIDS) are eligible to bid on building maintenance projects less than $150,000 solicited through that system and are not eligible to bid on construction projects that are $150,000 or greater as publicly advertised unless they qualify with the Colorado State Buildings Programs as stated above.

2. **BID FORM:** Bidders are required to use the Bid form attached to the bidding documents. Each bidder is required to bid on all alternates and unit prices and indicate the time to substantial completion in calendar days, and if applicable because designated in the Advertisement For Bids, the bidder is required to indicate the period of time agreed to finally complete the project after the date of substantial completion, also in calendar days. Bids indicating times for substantial completion or final acceptance in excess of the number of days indicated in the Advertisement for Bids may be found non-responsive and may be rejected. The bid shall not be modified or conditioned in any manner. Bids shall be submitted in sealed envelopes bearing the address and information shown below. If a bid is submitted by mail, this aforementioned sealed envelope should be enclosed in an outer envelope and sent to the following addressee:

**DELIVER SEALED BIDS TO:**
Geraldine Trujillo-Martinez, Purchasing Department
Colorado State University – Pueblo
2200 North Bonforte Boulevard
Administration Building, Room 309
Pueblo, CO 81001

The outside of the sealed inner envelope should bear the following information:

- Project #
- Project Name
- Name and Address of Bidder
- Date of Opening
- Time of Opening

3. **INCONSISTENCIES AND OMISSIONS:** Bidders may request clarification of any seeming inconsistencies, or matters seeming to require explanation, in the bidding documents at least three (3) business days prior to the time set for the opening of Bids. Decisions of major importance on such matters will be issued in the form of addendum.

4. **APPLICABLE LAWS AND REGULATIONS:** The bidder’s attention is called to the fact that all work under this Contract shall comply with the provisions of all state and local laws, approved state building codes, ordinances and regulations which might in any manner affect the work to be done or those to be employed in or about the work. Attention is also called to the fact that the use of labor for work shall be governed by the provisions of Colorado law which are hereinafter set forth in Articles 27 and 52E of the GENERAL CONDITIONS.

5. Note that the Special Provisions of the General Conditions of the Contract includes the following language: ILLEGAL ALIENS – PUBLIC CONTRACTS FOR SERVICES - CRS 8-17.5-101 and 24-76.5-101. The
Contractor certifies that the Contractor shall comply with the provisions of CRS 8-17.5-101 et seq. The Contractor shall not knowingly employ or contract with an illegal alien to perform work under this contract or enter into a contract with a subcontractor that fails to certify to the Contractor that the subcontractor shall not knowingly employ or contract with an illegal alien to perform work under this contract. The Contractor represents, warrants, and agrees that it (i) has verified that it does not employ any illegal aliens, through participation in the Basic Pilot Employment Verification Program administered by the Social Security Administration and Department of Homeland Security, and (ii) otherwise will comply with the requirements of CRS 8-17.5-102(2)(b). The Contractor shall comply with all reasonable requests made in the course of an investigation under CRS 8-17.5-102 by the Colorado Department of Labor and Employment. If the Contractor fails to comply with any requirement of this provision or CRS 8-17.5-101 et seq., the State may terminate this contract for breach and the Contractor shall be liable for actual and consequential damages to the State.

A Contractor that operates as a sole proprietor hereby swears or affirms under penalty of perjury that the Contractor (i) is a citizen of the United States or otherwise lawfully present in the United States pursuant to federal law, (ii) shall comply with the provisions of CRS 24-76.5-101 et seq, and (iii) shall produce one of the forms of identification required by CRS 24-76.5-103 prior to the effective date of this Contract. Except where exempted by federal law and except as provided in CRS 24-76.5-103(3), a Contractor that receives federal or state funds under this contract must confirm that any individual natural person eighteen years of age or older is lawfully present in the United States pursuant to CRS 24-76.5-103(4) if such individual applies for public benefits provided under this contract.

6. **TAXES:** The bidder’s attention is called to the fact that the Bid submitted shall exclude all applicable federal excise or manufacturers’ taxes and all state sales and use taxes as hereinafter set forth in Article 9C of the GENERAL CONDITIONS.

7. **OR EQUAL:** The words “OR EQUAL” are applicable to all specifications and drawings relating to materials or equipment specified. Any material or equipment that will fully perform the duties specified, will be considered “equal”, provided the bid submits proof that such material or equipment is of equivalent substance and function and is approved, in writing. Requests for the approval of “or equal” shall be made in writing at least five (5) business days prior to bid opening. During the bidding period, all approvals shall be issued by the Architect/Engineer in the form of addenda at least two (2) business days prior to the bid opening date.

8. **ADDENDA:** Owner/architect initiated addenda shall not be issued later than two (2) business days prior to bid opening date. All addenda shall become part of the Contract Documents and receipt must be acknowledged on the Bid form.

9. **METHOD OF AWARD - LOWEST RESPONSIBLE BIDDER:** If the bidding documents for this project require alternate prices, additive and/or deductible alternates shall be listed on the alternates bid form provided by the Principal Representative. Bidders should note the Method of Award is applicable to this Bid as stated below.

   A. **DEDUCTIBLE ALTERNATES:** The lowest responsible Bid, taking into account the Colorado resident bidder preference provision of Colorado law, will be determined by and the contract will be awarded on the base bid combined with deductible alternates, deducted in numerical order in which they are listed in the alternates bid form provided by the Principal Representative. The subtraction of alternates shall result in a sum total within available funds. If this bid exceeds such amount, the right is reserved to reject all bids. An equal number of alternates shall be subtracted from the base bid of each bidder within funds available for purposes of determining the lowest responsible bidder.

   B. **ADDITIVE ALTERNATES:** The lowest responsible Bid, taking into account the Colorado resident bidder preference provision of Colorado law, will be determined by and the contract will be awarded on the base bid plus all additive alternates added in the numerical order in which they are listed in the alternates bid form provided by the Principal Representative. The addition of alternates shall result in a sum total within available funds. If this bid exceeds such amount, the right is reserved to reject all bids. An equal number of alternates shall be added to the base bid of each bidder within funds available for purposes of determining the lowest responsible bidder.

   C. **DEDUCTIBLE AND ADDITIVE ALTERNATES:** Additive alternates will not be used if deductible alternates are used and deductible alternates will not be used if additive alternates are used.

The Advertisement for Bids can be located at the web site: www.colorado.gov/dpa/dfp/sbrep/constructdesign.htm (Click on the link below the second paragraph Colorado Construction and Design Notices)
Dear (Name):

We have reviewed your request for (Company's) use of BWG's CAD files for the (Project). While we can provide the files for (Company's) use, there are certain legal and liability issues that BWG and (Company) are required to be in agreement prior to our release of the CAD files. The following agreement satisfies BWG's legal and liability position. If this is acceptable to your office, two copies of this letter should be signed and initialed by (Company). Please return one signed copy for our records and we will then release the files.

AGREEMENT FOR USE OF ELECTRONIC MEDIA

This Agreement is made as of (Date) between Bennett Wagner & Grody Architects PC (“Architect”) and (Company). (“Contractor”) in reference to the following property:

   (Project)  
   (City, State)

(Company) (“Contractor”) has requested that BWG (“Architect”), as an accommodation to Contractor, provide Contractor with Electronic Media copies of the following original documents prepared by Architect:
The drawings, specifications, other documents and data, including, but not limited to, Electronic Media, prepared or supplied by the Architect for the Project, whether in hard copy or machine readable form, are instruments of the Architect’s services with respect to this Project. As such, they are the property of the Architect, who shall retain all common law, statutory and other reserved rights, including copyrights.

Revised copies of the Electronic Media will not be supplied by the Architect, nor will the Architect provide support services to make the file run on Contractor’s system. Nevertheless, the Architect hereby agrees, subject to the convenience set forth below, that Contractor may use the Electronic Media described above only for the following purposes:

Shop Drawing Background

The Electronic Media is being furnished “as is”, and the use of same shall be solely at Contractor’s risk. By use of the Electronic Media, Contractor acknowledges that data may be lost in translation from one format to another, or that electronic data may be altered, whether inadvertently or otherwise, and there is a risk of errors or omissions in any subsequent output, and that the Electronic Media may not include relevant subsequent modifications.

In exchange for the Architect providing the Electronic Media for the purposes stated above, or for any unauthorized use, Contractor agrees, to the fullest extent permitted by law, to hold harmless, indemnify and defend the Architect, it’s shareholders, directors, employees, agents and consultants, from and against any and all claims, liabilities, suits, demands, losses, costs and expenses, including actual attorney’s fees and all other costs related to the defense of any such claim or demand, including but not limited to all legal expenses and fees incurred on appeal, and all interest thereon, accruing or resulting from any and all persons, firms or any other legal entities on account of any damages or losses to property or persons, including death, or economic losses, arising in any way in
connections with the use, modification, misinterpretation, misuse or reuse of the 
Electronic Media, except where the Architect is found solely liable as between the 
parties hereto as well as any other persons, firms or any other legal entities, by a 
court or forum of competent jurisdiction.

To the fullest extent permitted by law, and notwithstanding any other provisions 
of this Agreement, the total liability, in the aggregate of the Architect and the 
Architect’s officer’s, directors, employees, agents and consultants, and any of 
them, to the Contractor and anyone claiming by, through or under Contractor, for 
any injuries, liabilities, claims, losses, expenses, costs or damages of any nature 
whatsoever arising out of, resulting from or in any way limited to the negligence, 
professional errors or omissions, strict liability, breach of contract or warranty, 
express or implied, of the Architect or the Architect’s officers, directors, 
employees, agents and consultants, or any of them shall not exceed One Dollar 
($1.00).

The charge for providing above listed Electronic Media shall be $ , 
made payable to Bennett Wagner & Grody Architects, PC.

Please call if you have any questions or would like to discuss this issue further.

ARCHITECT                          CONTRACTOR

By___________________________       By_________________________

Martha L. Bennett                  
Principal, Architect

Date_________________________       Date_________________________
STATE OF COLORADO
General Support Services, Division of Central Services
State Buildings and Real Estate Programs
1525 Sherman Street, Room 250
Denver, CO 80203-1714
PHONE: (303) 866-6141
FAX: (303) 894-7478

INSTRUCTIONS

Submission of a “Contractor’s Statement of Experience” (Form SC-9.1) qualifies contractors through the State Buildings and Real Estate Programs’ Contractor Registration Program (C.R.S 24-30-1303(1)(q) and R-24-103-402-01).

Contractor registration is required for bids on state funded construction projects equal to or greater than $50,000. This registration form must be received by State Buildings and Real Estate Programs at 1525 Sherman Street, Room 250, Denver, CO, 80203 at least two (2) business days prior to the date fixed for publicly opening sealed bids.

Registration remains in effect for one year. Contractors have 30 days from the date of expiration to resubmit and remain registered.

The form must be completed in its entirety. Failure to include all relevant information will delay or prevent registration.

This registration is not to be considered pre-qualification for any construction project for the State of Colorado. Agencies may require submittal of additional information for specific projects.

Our web site contains a list of qualified contractors. If you believe you are qualified to bid on State of Colorado construction projects greater than $50,000, please visit our web site: http://www.gssa.state.co.us, select Division of Purchasing State Buildings and Real Estate Programs, select the State Buildings’ box on the left side of the screen, and select List of Qualified Contractors. The alphabetical letters will expand by selecting the first letter of your company name. For additional information, please call State Buildings and Real Estate Programs at (303) 866-6141.

Note: This registration is NOT for the Bid Information and Distribution System (BIDS). For information on BIDS, please visit the State Buildings’ website at http://www.gssa.state.co.us or call the Help Desk at (303) 894-2039.
CONTRACTOR STATEMENT OF EXPERIENCE
STATE FORM SC-9.1
Please indicate if this is a new registration ☐ or a renewal ☐.

DATE SUBMITTED: ________________________________

COMPANY INFORMATION

NAME OF COMPANY: _________________________________________________________________

DBA or TRADE NAME: _________________________________________________________________

STREET ADDRESS: _________________________________________________________________

CITY, STATE, ZIP _________________________________________________________________

TELEPHONE: (______)_________________  FAX: (______)__________________

FEDERAL EMPLOYER IDENTIFICATION NUMBER: __________________________________________

PRINCIPAL OWNER/OFFICER: Name: ______________________________________________

Title: ______________________________________________

CONTACT: Name: _______________________  Title: __________________________

TELEPHONE: (______)_____________________  FAX: (______)__________________

BONDING

Please indicate current bonding limits:  Single Project: ______________________________________

Aggregate: ______________________________________

Please list surety companies, including address and agent.

_____________________________________________________________________________
_____________________________________________________________________________
_____________________________________________________________________________
_____________________________________________________________________________
CONTRACTOR STATEMENT OF EXPERIENCE
STATE FORM SC-9.1

M/WBE SELF CERTIFICATION

In an effort to track levels of participation by women and minorities in construction for the State of Colorado, the following information is requested. Please indicate the appropriate category of ownership for your company. “Owned” in this context means a business that is at least 51 percent owned by an individual(s) who also control(s) and operate(s) it. “Control” in this context means exercising the power to make policy decisions. “Operate” means actively involved in the day-to-day management.

☐ Female-Owned       ☐ Male-Owned
☐ African American   ☐ Asian/Pacific American  ☐ White (non-Hispanic)
☐ Hispanic American  ☐ Native American      ☐ Other:___________________

SERVICES PROVIDED

If you are a General Contractor interested in bidding on all types of building construction, check the box “All classes of Construction.” If you are interested in contracting directly with the State for certain types of work only, check box as per Construction Specifications Institute (CSI) divisions. If you wish to list specific categories in the divisions please use the five (5) digit number and title per CSI format in space provided below.

☐ DIVISION 01-GENERAL REQUIREMENTS
☐ DIVISION 02-SITEWORK
☐ DIVISION 03-CONCRETE
☐ DIVISION 04-MASONRY
☐ DIVISION 05-METALS
☐ DIVISION 06-WOOD & PLASTIC
☐ DIVISION 07-THERMAL & MOISTURE
☐ DIVISION 08-DOORS & WINDOWS
☐ ALL CLASSES OF CONSTRUCTION
☐ DIVISION 09-FINISHES
☐ DIVISION 10-SPECIALTIES
☐ DIVISION 11-EQUIPMENT
☐ DIVISION 12-FURISHINGS
☐ DIVISION 13-SPECIAL CONSTRUCTION
☐ DIVISION 14-CONVEYING SYSTEMS
☐ DIVISION 15-MECHANICAL
☐ DIVISION 16-ELECTRICAL

SIGNATURE

By _____________________________________ ______________________________________
Signature              Date
_____________________________________ ______________________________________
Name (typed or printed)             Title

Submit completed form to State Buildings and Real Estate Programs (SBREP) at 1525 Sherman Street, Room 250, Denver, CO, 80203 or fax the completed form to 303/894-7478.

DATE RECEIVED AT SBP: ________________________
### BID

**Institution/Agency:** Colorado State University - Pueblo  
**Project No./Name:** C9103 / P-08025 / Academic Resources Center  

**Bidder Acknowledges Receipt of Addenda No.s:**

**Base Bid**
- (Refer to Bid Alternate Form SC-6.13.1, attached)
- (Refer to Unit Price Form, attached)
- (Refer to Basis for Bids – Micropile Construction form, attached)

**Bidder’s Time of Completion:**

a. Time Period from Notice to Proceed to Substantial Completion:

b. Time Period from Substantial completion to Final Acceptance:

c. Time of Completion of Entire Project (a + b):

**1. BID:** Pursuant to the advertisement by the State of Colorado dated the undersigned bidder hereby proposes to furnish all the labor and materials and to perform all the work required for the complete and prompt execution of everything described or shown in or reasonably implied from the Bidding Documents, including the Drawings and Specifications, for the work and for the base bid indicated above. Bidders should include all taxes that are applicable.

**2. EXAMINATION OF DOCUMENTS AND SITE:** The bidder has carefully examined the Bidding Documents, including the Drawings and Specifications, and has examined the site of the work, so as to make certain of the conditions at the site and to gain a clear understanding of the work to be done.

**3. PARTIES INTERESTED IN BID:** The bidder hereby certifies that the only persons or parties interested in this Bid are those named herein, and that no other bidder or prospective bidder has given any information concerning this Bid.

**4. BID GUARANTEE:** This Bid is accompanied by the required Bid Guarantee. You are authorized to hold said Bid Guarantee for a period of not more than thirty (30) days after the opening of the Bids for the work above indicated, unless the undersigned bidder is awarded the Contract, within said period, in which event the Director, State Buildings and Real Estate Programs, may retain said Bid Guarantee, until the undersigned bidder has executed the required Agreement and furnished the required Performance Bond, Labor and Material Payment Bond, Insurance Policy and Certificates of Insurance.

**5. TIME OF COMPLETION:** The bidder agrees to achieve substantial completion of the entire project within the number of calendar days entered above, and if applicable, further agrees that the period between the date of substantial completion and the date of final acceptance of the entire project will not exceed the number of calendar days noted above. If awarded this work, the bidder agrees to begin work within ten (10) days from the date of the Notice to Proceed subject to Article 46, Time of Completion and Liquidated Damages of The General Conditions of the Contract, and agrees to prosecute the work with due diligence to completion. The bidder represents that Article 54D has been reviewed to determine the type and amount of any liquidated damages that may be specified for this contract.

**6. EXECUTION OF DOCUMENTS:** The bidder understands that if this Bid is accepted, he must execute the required Agreement and furnish the required Performance Bond, Labor and Material Payment Bond, Insurance Policy and Certificates of Insurance within ten (10) days from the date of the Notice of Award, and that the bidder will be required to sign to acknowledge and accept the Contract Documents, including the Drawings and Specifications.

**7. ALTERNATES:** Refer to the Information for Bidders (SC-6.12) for Method of Award for Alternates and use State Form SBP-6.13.1 Bid Alternates form to be submitted with this bid form if alternates are requested by the institution/agency in the solicitation documents.

**8. UNIT PRICES:** Provide Unit Prices listed on Unit Price form to be submitted with this bid form.

**9. BASIS FOR BIDS – DRILLED MICROPILES:** Basis for Bids for Micropile Construction shall state quantity, diameter, and total length of Micropiles assumed in bid. Over-run Unit Prices shall be used for varying subsoil conditions only. Over-run Unit Prices shall not be used by Contractor to compensate for accidental over-run or for incorrect design assumptions in bid, including incorrect micropile quantities, diameters, and lengths. Provide quantity, diameter, and total length of Micropiles on the Basis for Bid – Drilled Micropiles form to be submitted with this bid form.

**10. SUBMIT WAGE RATES** (direct labor costs) for prime contractor and subcontractor as requested by the institution/agency in the solicitation documents. The right is reserved to waive informalities and to reject any and all Bids.

**Dated this Day of , 20**

**THE BIDDER:**

**Company Name**

**Address (including city, state and zip)**

**Phone number:**

**Signature**

**Name (Print) and Title**

**SIGNATURES:** If the Bid is being submitted by a Corporation, the Bid should be signed by an officer, i.e., President or Vice-President. The signature of the officer shall be attested to by the Secretary and properly sealed. If a sole proprietorship or a partnership is submitting the Bid, the Bid shall so indicate and be properly signed.
Additive alternates will not be used if deductible alternates are used and deductible alternates will not be used if additive alternates are used.

**Additive Alternates**

Refer to specification Section 01 23 00 - Alternates for descriptions of add alternates. If the add alternates are accepted, the base bid would be modified by the amount entered by the bidder.

**A.A. No. 1** The existing south plaza, planter and site walls shall be demolished and replaced with construction as indicated on the drawings.  
Add $________

**A.A. No. 2** The tall book shelves shall be covered with tops as indicated on the drawings.  
Add $________

**A.A. No. 3** Demolish and replace the (5) pedestrian lights in the plaza east of the building as indicated on the drawings.  
Add $________

**A.A. No. 4** Demolish and Replace the basement slab as indicated on the drawings.  
Add $________

**A.A. No. 5** Demolish the existing Sidewalk Vertical Reciprocating Conveyor and replace as indicated on the drawings and specifications.  
Add $________

**A.A. No. 6** The existing concrete stairs shall be covered with Resilient Stair treads and Risers as specified and scheduled.  
Add $________

**A.A. No. 7** Add CO2 sensors per the plans and specifications.  
Add $________

Bidder  
Date
# UNIT PRICES FORM

**Institution/Agency:** Colorado State University - Pueblo  
**Project No./Name:** C-9103/P-08025 / Academic Resources Center  

## Unit Prices

Refer to specification Section 01 22 00 – Unit Prices for descriptions of unit prices. A unit price is an amount incorporated in the Agreement, applicable during the duration of the Work as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, added to or deducted from the Contract Sum by appropriate modification, if the scope of Work or estimated quantities of Work required by the Contract Documents are increased or decreased.

<table>
<thead>
<tr>
<th>Unit Price No.</th>
<th>Description</th>
<th>Unit of Measure</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Drilled Micropiles – Over-run</td>
<td>Per Lineal Ft.</td>
<td>$___________</td>
</tr>
<tr>
<td>2</td>
<td>Drilled Micropiles – Under-run</td>
<td>Per Lineal Ft.</td>
<td>$___________</td>
</tr>
<tr>
<td>3</td>
<td>Asphalt Paving</td>
<td>Per Sq. Yd.</td>
<td>$___________</td>
</tr>
<tr>
<td>4</td>
<td>Concrete Paving</td>
<td>Per Sq. Yd.</td>
<td>$___________</td>
</tr>
<tr>
<td>5</td>
<td>Gypsum Board Assemblies – Partition Type 1</td>
<td>Per Lineal Ft.</td>
<td>$___________</td>
</tr>
<tr>
<td>6</td>
<td>Gypsum Board Assemblies – Partition Type 2</td>
<td>Per Lineal Ft.</td>
<td>$___________</td>
</tr>
<tr>
<td>7</td>
<td>Carpet Tile – Field Carpet Tile</td>
<td>Per Sq. Yd.</td>
<td>$___________</td>
</tr>
<tr>
<td>8</td>
<td>Carpet Tile – Accent Carpet Tile</td>
<td>Per Sq. Yd.</td>
<td>$___________</td>
</tr>
<tr>
<td>9</td>
<td>Painting – Gypsum Board Walls</td>
<td>Per Sq. Foot.</td>
<td>$___________</td>
</tr>
<tr>
<td>10</td>
<td>Additional Light Switches</td>
<td>Per Each</td>
<td>$___________</td>
</tr>
<tr>
<td>11</td>
<td>Additional Duplex Receptacles</td>
<td>Per Each</td>
<td>$___________</td>
</tr>
<tr>
<td>12</td>
<td>Speaker-Strobe Devices</td>
<td>Per Each</td>
<td>$___________</td>
</tr>
<tr>
<td>13</td>
<td>Strobe Devices</td>
<td>Per Each</td>
<td>$___________</td>
</tr>
<tr>
<td>14</td>
<td>Speaker Devices</td>
<td>Per Each</td>
<td>$___________</td>
</tr>
<tr>
<td>15</td>
<td>Exterior concrete/precast concrete washing</td>
<td>Per 1000 sf</td>
<td>$___________</td>
</tr>
<tr>
<td>16</td>
<td>Additional electrical duct bank</td>
<td>Per Lineal Ft.</td>
<td>$___________</td>
</tr>
<tr>
<td>17</td>
<td>Additional electrical manhole</td>
<td>Per Each</td>
<td>$___________</td>
</tr>
<tr>
<td>18</td>
<td>Additional Sandblasting</td>
<td>Per Sq. Ft.</td>
<td>$___________</td>
</tr>
</tbody>
</table>

**Bidder** ___________________________  
**Date** ___________________________
BASIS FOR BIDS – DRILLED MICROPILE CONSTRUCTION FORM

Institution/Agency: Colorado State University - Pueblo
Project No./Name: C-9103/P-08025 / Academic Resources Center

Basis for Bids – Drilled Micropile Construction
Refer to specification Section 31 63 33 – Drilled Micropiles for performance requirements for drilled micropiles. Provide quantity, diameter, and total length of Micropiles assumed in bid. Over-run Unit Prices shall be used for varying subsoil conditions only. Over-run Unit Prices shall not be used by Contractor to compensate for accidental over-run or for incorrect design assumptions in bid, including incorrect micropile quantities, diameters, and lengths.

Drilled Micropiles – Quantity

Drilled Micropiles – Diameter

Drilled Micropiles – Total Length

Bidder  Date
**STATE OF COLORADO**
**OFFICE OF THE STATE ARCHITECT**
**STATE BUILDINGS PROGRAMS**

**BID BOND**

**Institution/Agency:** Colorado State University - Pueblo

**Project No./Name:** C-9103/P-08025 / Academic Resources Center

**KNOW ALL MEN BY THESE PRESENTS:**

**WHEREAS,** hereinafter called the “PRINCIPAL”, is submitting a PROPOSAL for the above described project, to the STATE OF COLORADO, hereinafter called the “OBLIGEE”.

**WHEREAS,** the Advertisement for Bids has required as a condition of receiving the Proposals that the Principal submit with the PROPOSAL GUARANTY in an amount not less than five per cent (5%) of the Proposal, which sum it is specifically agreed is to be forfeited as Liquidated Damages in the event that the Principal defaults in his obligation as hereinafter specified, and, in pursuance of which Requirement, this Bid is made, executed and delivered.

**NOW THEREFORE,** the Principal and ______________, a corporation of the State of ______________, duly authorized to transact business in Colorado, as Surety, are held and firmly bound unto the Obligee, in the sum of five per cent (5%) of the Principal’s total bid price, lawful money of the United States for the payment of which sum, well and truly to be made to the Obligee, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

**FURTHER THAT,** a condition of the obligation that the Principal shall maintain his Proposal in full force and effect for thirty (30) days after the opening of the proposals for the project, or, if the Principal’s Proposal is accepted, the Principal shall, within the prescribed time, execute the required Agreement, furnish the required Performance Bond, Labor and Material Payment Bond, Insurance Policy, and Certificates of Insurance, then this obligation shall be null and void, otherwise it shall remain in full force and effect, and subject to forfeiture upon demand as Liquidated Damages.

**IN WITNESS WHEREOF** said Principal and Surety have executed this Bond, this ______ day of __________, A.D., 20______.

(Corporate Seal)

**THE PRINCIPAL**

Company Name

Address (including city, state and zip)

Phone number:

Signature

Name (Print) and Title

**SIGNATURES**

If the “Principal” is doing business as a Corporation, the Bid Bond shall be signed by an officer, i.e., President or Vice President. The signature of the officer shall be attested to by the Secretary and properly sealed.

If the “Principal” is an individual or a partnership, the Bid Bond shall so indicate and be properly signed.

(Corporate Seal)

**THE SURETY**

Secretary

By Attorney-in-Fact

*This bond must be accompanied by power of attorney, effectively dated. Failure to provide a properly executed bid bond with a properly executed power of attorney will result in the bidder’s proposal being deemed non-responsive.*
STATE OF COLORADO  
OFFICE OF THE STATE ARCHITECT  
STATE BUILDINGS PROGRAMS

NOTICE OF AWARD

TO:

The State of Colorado, represented by the undersigned, has considered the Proposals submitted for the above described work.

Your Proposal, deemed to be in the best interest of the State of Colorado, in the amount of ____________________ DOLLARS AND NO/100* ($)________________*) is hereby accepted, pending final execution of the Agreement.

You are required to execute the approved Agreement and to furnish the Performance Bond, Labor and Material Payment Bond, Insurance Policy and Certificates of Insurance within ten (10) days from the date of this Notice.

If you fail to execute said Agreement and to furnish said Performance Bond, Labor and Material Payment Bond, Insurance Policy and Certificates of Insurance within ten (10) days from the date of this Notice, the State Controller will be entitled to retain the amount of the Proposal Guaranty submitted with your Proposal as Liquidated Damages. In this event, the right is reserved to consider all of your rights arising out of the acceptance of your Proposal as abandoned and to award the work covered by your Proposal to another, or to re-advertise the work, or otherwise dispose thereof.

By ______________________________________  
State Buildings Programs (of Authorized Delegate)  Date

By ______________________________________  
Principal Representative (Institution or Agency)  Date

When completely executed, this form is to be sent by certified mail to the Contractor by the Principal Representative.
STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAMS

MINORITY/WOMEN BUSINESS ENTERPRISE PARTICIPATION REPORT

Institution/Agency: Colorado State University - Pueblo
Project No./Name: C-9103/P-08025 / Academic Resources Center

TO BE ELIGIBLE FOR AWARD OF THIS CONTRACT, EACH CONTRACTOR (INCLUDING ARCHITECT/ENGINEER/CONSULTANT/CONTRACTOR) IS REQUESTED TO COMPLY WITH THESE REQUIREMENTS.

I. The undersigned Architect/Engineer/Consultant/Contractor hereby certifies that the (company) (joint venture) (is) (is not)* a minority enterprise as defined in this report. The undersigned Architect/Engineer/Consultant/Contractor hereby certifies the (company) (joint venture) (is) (is not)* a woman-owned business enterprise as defined. (*Strike out where inapplicable.)

*Persons signing hereby swear and affirm that they are authorized to act on Architect/Engineer/Consultant/Contractor’s behalf and acknowledge that the State is relying on their representations to that effect. Principal is not a recognized title and will not be accepted

ARCHITECT/ENGINEER/CONSULTANT/CONTRACTOR

Legal Name of Contracting Entity

*Signature

By: ____________________________
   Name (print)     Title

Date: ____________________________

II. It is the general policy of the State of Colorado to be as inclusive as possible to all member communities when spending taxpayer dollars.

III. REQUIREMENTS

A. Minority Business Enterprise (MBE) means, for the purpose of this report, a business enterprise at least 51 percent that is owned and controlled by minority group members, or, in the case of a publicly owned business, at least 51 percent of the stock of which is owned and controlled by minority group members. Eligible persons are expected to be engaged full time in the day-to-day operation and management of the business. Minority group members are ethnic minorities including African American, Hispanic American, Native American or Asian/Pacific American.

B. Women Business Enterprise (WBE) means, for the purpose of this report, a business enterprise of at least 51 percent of which is owned and controlled by a woman or women, or, in the case of a publicly-owned business, at least 51 percent of the stock of which is owned and controlled by women. Women are expected to be engaged full time in the day-to-day operation and management of the business.

C. The State of Colorado does not have a certification process nor does it require MBE’s and WBE’s to be certified EXCEPT for certain contracts for highway and bridge construction administered by the Colorado Department of Transportation.

D. The percentages of minority and women-owned business participation will be determined by dollar value of the work subcontracted to or joint ventured with minority and women-owned firms, as compared to the total dollar value of the bid amount for all work bid under this contract.
E. Prior to the award of this contract, the contractor will be required to provide to the Principal Representative a list of M/WBE enterprises, stipulating the dollar amount of each subcontract or supplier of materials on page 2 of this Minority and Women Business Enterprises Participation Report.

F. The contractor will retain records and documents showing the level of participation for two years following completion of this contract. These records and documents, or copies thereof, will be made available at reasonable times and places for inspection by an authorized representative of the Principal Representative, or its designated representatives, and will be submitted to such representatives upon written request.

MBE: ☐ Yes ☐ No
WBE: ☐ Yes ☐ No

Total Contract Amount: $______________

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*Indicate ethnicity based on Paragraph III. A. above.

Total MBE Contracts: $______________
Total WBE Contracts: $______________
Total MBE %: __________________________
Total WBE %: __________________________
STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAMS

CONTRACTOR'S AGREEMENT
DESIGN/BID/BUILD STANDARD FORMAT
(STATE FORM SC-6.21)

CONTRACT ROUTING NO.: __________________________

AGENCY IDENTIFICATION NO.: __________________________

PROJECT NO.: C9103/P08025

PROJECT NAME: Colorado State University - Pueblo / Academic Resources Center
STATE OF COLORADO
CONTRACTOR’S AGREEMENT DESIGN/BID/BUILD STANDARD FORMAT
(STATE FORM SC-6.21)

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Exhibits:

A Contractor’s Bid (Form SC-6.13)
B Performance Bond (Form SC-6.22)
C Labor and Material Payment Bond (Form SC-6.221)
D Insurance Certificates
E Minority and Women Business Enterprises Participation Report (MWBE-1)
F Certification and Affidavit Regarding Unauthorized Immigrants (required at contract signing prior to commencing work)
STATE OF COLORADO
CONTRACTOR'S AGREEMENT DESIGN/BID/BUILD STANDARD FORMAT
(STATE FORM SC-6.21)

Agency I.D. No.: ___________ Contract Routing No.: ____________ Project No. _____________

1. PARTIES. THIS AGREEMENT is entered into by and between the STATE OF COLORADO, acting by and through the (agency) __________, hereinafter called the Principal Representative, and (vendor name) __________ having its offices at (vendor address) __________ hereinafter referred to as the Contractor.

2. EFFECTIVE DATE AND NOTICE OF NONLIABILITY. This Agreement shall not be effective or enforceable until it is approved and signed by the State Controller or its designee (hereinafter called the “Effective Date”), but shall be effective and enforceable thereafter in accordance with its provisions. The State shall not be liable to pay or reimburse Contractor for any performance hereunder or be bound by any provision hereof prior to the Effective Date.

WHEREAS, the Principal Representative intends to ____________________________________________. Hereinafter called the Project; and

WHEREAS, authority exists in Law and Funds have been budgeted, appropriated, and otherwise made available, and a sufficient unencumbered balance thereof remains available for payment in Fund Number __________, Account Number _____, Contract Encumbrance Number ____________, and

WHEREAS, this is a phase one waived contract, waiver number 156 Contractors Agreement for Capital Construction Form SC6.21.

WITNESSETH, that the State of Colorado and the Contractor agree as follows:

ARTICLE 1. PERFORMANCE OF THE WORK
The Contractor shall furnish all the work, labor and materials, and shall perform, to the satisfaction of the Principal Representative and its Architect/Engineer, all of the work required for the complete and prompt execution of everything described or shown in, or reasonably implied from the Contract Documents, including The General Conditions of the Contract and the Drawings and Specifications for the above Project.

ARTICLE 2. PROVISIONS OF THE CONTRACT DOCUMENTS
The Contractor agrees to do the work in a first class, substantial and workmanlike manner to the satisfaction of the State of Colorado and its Architect/Engineer in strict accordance with the provisions of the Contract Documents, including The General Conditions of the Contract and the Drawings and Specifications.

ARTICLE 3. TIME OF COMPLETION
The Contractor agrees to substantially complete the entire Project within _____ calendar days from the date of the Notice to Proceed, and, if applicable, the Contractor agrees to complete the final punch list and finally complete the Project within _____ calendar days. The Contractor shall execute the work with due diligence to completion.

ARTICLE 4. ESSENTIAL CONDITION
Timely completion of the project is an essential condition of this Agreement. The Contractor shall be subject to any liquidated damages described in Article 54D of The General Conditions of the Contract for failure to satisfactorily complete the work within the time periods in Article 3 above.

ARTICLE 5. CONTRACT SUM
The Contractor shall be paid for the performance of this Agreement, subject to any additions and deductions as provided for in Articles 32, 34 and 35 of The General Conditions of the Contract, the sum of _______________ ______________ DOLLARS AND NO/100* ($________-*)

ARTICLE 6. CONTRACT DOCUMENTS
The Contract Documents, as enumerated in Article 1 of The General Conditions of the Contract, are all essential parts of this Agreement and are fully incorporated herein.
THE PARTIES HERETO HAVE EXECUTED THIS CONTRACT

*Persons signing for Contractor hereby swear and affirm that they are authorized to act on Contractor’s behalf and acknowledge that the State is relying on their representations to that effect. **Principal is not a recognized title and will not be accepted**

THE CONTRACTOR

Legal Name of Contracting Entity

*Signature

By ________________________________

Name (print) ________________________________

Title ________________________________

Date: ________________________________

STATE OF COLORADO, acting by and through:

By: ________________________________

Date: ________________________________

APPROVED

DEPARTMENT OF PERSONNEL & ADMINISTRATION
STATE BUILDINGS PROGRAMS
State Architect (or authorized Delegate)

By: ________________________________

Date: ________________________________

ALL CONTRACTS MUST BE APPROVED BY THE STATE CONTROLLER:

CRS §24-30-202 requires the State Controller to approve all State Contracts. This Contract is not valid until signed and dated below by the State Controller or delegate. Contractor is not authorized to begin performance until such time. If Contractor begins performing prior thereto, the State of Colorado is not obligated to pay Contractor for such performance or for any goods and/or services provided hereunder.

APPROVED:

STATE OF COLORADO
STATE CONTROLLER’S OFFICE
State Controller (or authorized Delegate)

By: ________________________________

Date: ________________________________
BONDING COMPANY: DO NOT MAKE ANY CHANGES TO THE LANGUAGE IN THIS BOND.

KNOW ALL PERSONS BY THESE PRESENTS:

That the Contractor

as Principal and hereinafter called “Principal,”

and

as Surety and hereinafter called “Surety,” a corporation organized and existing under the laws of ________________ are held and firmly bound unto the STATE OF COLORADO acting by and through ________________, (AGENCY OR INSTITUTION) hereinafter called the “Principal Representative”, in the sum of ____________________________ ________________ Dollars ($__________________________)

for the payment whereof the Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly, by these presents.

WHEREAS, the Principal and the State of Colorado acting by and through the Principal Representative have entered into a certain Contract, hereinafter called “Contract,” dated ______________________, 20 __________, for the construction of a PROJECT described as

which Contract is hereby by reference made a part hereof:
NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION, is such that, if the Principal shall promptly, fully and faithfully perform all the undertakings, covenants, terms, conditions and agreements of said Contract during the original term of said Contract any extensions thereof that may be granted by the Principal Representative with or without notice to the Surety, and during the life of any guaranty required under the Contract, and shall also well and truly perform and fulfill all undertakings, covenants, terms, conditions and agreements of any and all duly authorized modifications of said Contract that may hereafter be made, notice of which modifications to the Surety being hereby waived, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

AND THE SAID SURETY, for value received hereby stipulates and agrees that whenever the Principal shall be, and declared by the Principal Representative to be in default under said Contract, the State of Colorado having performed its obligations thereunder, the Surety may promptly remedy the default or shall promptly (1) Complete the Contract in accordance with its terms and conditions, or (2) Obtain a bid or bids for submittal to the Principal Representative for completing the Contract in accordance with its terms and conditions, and upon determination by the Principal Representative and Surety of the lowest responsible bidder, arrange for a contract between such bidder and the State of Colorado acting by and through the Principal Representative and make available as work progresses (even though there should be a default or a succession of defaults under the contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion, less the balance of the contract price but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount hereinafter set forth. The term "balance of the contract price" as herein used shall mean the total amount payable to the Principal under the Contract and any amendments thereto, less the amount properly paid by the State of Colorado to the Contractor.

No right of action shall accrue on this bond to or for the use of any person or corporation other than the State of Colorado.

IN WITNESS WHEREOF said Principal and Surety have executed this Bond, this ______ day of , A.D., ______________________ 20____.

(Corporate Seal)

THE PRINCIPAL

ATTEST:

By: ________________________________
Title: ________________________________

Secretary

(Corporate Seal)

SURETY

By: ________________________________

Attorney-in-fact

THIS BOND MUST BE ACCOMPANIED BY POWER OF ATTORNEY, EFFECTIVELY DATED

Note: This bond is issued simultaneously with another bond conditioned for the full and faithful payment for all labor and material of the contract.
Institution/Agency:  Colorado State University - Pueblo
Project No./Name:  C-9103/P-08025 / Academic Resources Center

KNOW ALL PERSONS BY THESE PRESENTS:

That the Contractor

as Principal and hereinafter called "Principal,"

and

as Surety and hereinafter called "Surety," a corporation organized and existing under the laws of 

___________________________ are held and firmly bound unto the STATE OF COLORADO

acting by and through ____________________________

(agency or institution)

hereinafter called "Principal Representative," and to all subcontractors and any others who have supplied

or furnished or shall supply or furnish materials, rental machinery, tools, or equipment actually used in the

performance of the hereinafter identified Contract, or who have performed or shall perform labor in the

performance of or in connection with said Contract, hereinafter called "Obligees" in the sum of __________

___________________________ Dollars ($____________________)

together with interest at the rate of eight per cent (8%) per annum on all payments becoming due in

accordance with said Contract, from the time such payments shall become due until such payment shall

be made, for the payment of which, well and truly made to the Obligees, the Principal and the Surety bind

themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly, by

these presents.

WHEREAS, the Principal and the State of Colorado acting by and through the Principal Representative

have entered into a certain Contract, hereinafter called "Contract," dated ________________, 20___ for the

construction of a PROJECT described as


 which Contract is hereby by reference made a part hereof;
NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that if the Principal and the Surety shall fully indemnify and save harmless the State of Colorado and the Principal Representative from and against any and all costs and damages, including patent infringements, which either may suffer by reason of any failure or failures of the Principal promptly and faithfully to perform all terms and conditions of said Contract and shall fully reimburse and repay the State of Colorado and the Principal Representative all outlay and expense which the State of Colorado and the Principal Representative may incur in making good any such failure or failures, and further, if the Principal and his subcontractors shall duly and promptly pay for any and all labor, materials, team hire, sustenance, provisions, provender, rental machinery, tools, or equipment and other supplies which have been or shall be used or consumed by said Principal or his subcontractors in the performance of the work of said Contract, and it said Principal shall duly and promptly pay all his subcontractors the sums due them for any and all materials, rental machinery, tools, or equipment and labor that have been or shall be furnished, supplied, performed or used in connection with performance of said Contract, and shall also fully indemnify and save harmless the State of Colorado and the Principal Representative to the extent of any and all expenditures which either or both of them may be required to make by reason of any failures or defaults by the Principal or any subcontractor in connection with such payments; then this obligation shall be null and void, otherwise it shall remain in full force and effect.

It is expressly understood and agreed that any alterations which may be made in the terms of said Contract or in the work to be done under said Contract, or any extension(s) of time for the performance of the Contract, or any forebearance on the part of either the State of Colorado or the Principal to any of the others, shall not in any way release the Principal and the Surety, or either of them, their heirs, executors, administrators, successors or assigns from their liability hereunder, notice to the Surety of any such alteration, extension or forbearance being hereby waived.

IN WITNESS WHEREOF, the Principal and the Surety have executed this Bond, this __________ day of ______, A.D., 20______.

(Corporate Seal)  
THE PRINCIPAL

ATTEST:

By: ____________________________  
Title: ___________________________  
Secretary

(Corporate Seal)  
SURETY

By: ____________________________  
Attorney-in-fact

THIS BOND MUST BE ACCOMPANIED BY POWER OF ATTORNEY, EFFECTIVELY DATED

Note: This bond is issued simultaneously with another bond conditioned for the full and faithful performance of the contract.
STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAMS

NOTICE TO PROCEED (DESIGN/BID/BUILD CONTRACT)

Date of Notice: ____________________

Date to be inserted by the Principal Representative

Date/Description of Contract Documents:

Institution/Agency: Colorado State University - Pueblo

Project No./Name: C-9103/P-08025 / Academic Resources Center

---

Attach Notice of Code Compliance from Code Review Agent/Building Official for Documents Listed Above

To:

This is to advise you that your Performance Bond, Labor and Material Payment Bond, the requisite Builder’s Risk Insurance Policy or Certificate for same, and Certificates of Insurance have been received. Our issuance of this Notice does not relieve you of responsibility to assure that the bond and insurance requirements of the Contract Documents are met for the duration of the Agreement. The Agreement dated _____ covering the above described work has been fully executed.

You are hereby authorized and directed to proceed within ten (10) days from date of this Notice as required in the Agreement. Any liquidated damages for failure to achieve substantial completion by the date agreed that may be applicable to this contract will be calculated using the date of this Notice for the date of the commencement of the Work.

By ________________________________________________________________________ Date ________________________________________________________________________

State Buildings Programs (or Authorized Delegate) Principal Representative (Institution or Agency)

When completely executed, this form is to be sent by certified mail to the Contractor by the Principal Representative.
STATE OF COLORADO  
OFFICE OF THE STATE ARCHITECT  
STATE BUILDINGS PROGRAMS  

CERTIFICATION AND AFFIDAVIT REGARDING UNAUTHORIZED IMMIGRANTS  

Institution/Agency:  Colorado State University - Pueblo  
Project No./Name:  C-9103/P-08025 / Academic Resources Center  

A. CERTIFICATION STATEMENT  
   CRS 8-17.5-101 & 102 (HB 06-1343, SB 08-193)  

The Vendor, whose name and signature appear below, certifies and agrees as follows:  

1. The Vendor shall comply with the provisions of CRS 8-17.5-101 et seq. The Vendor shall not knowingly employ or contract with an unauthorized immigrant to perform work for the State or enter into a contract with a subcontractor that knowingly employs or contracts with an unauthorized immigrant.  

2. The Vendor certifies that it does not now knowingly employ or contract with an unauthorized immigrant who will perform work under this contract, and that it will participate in either (i) the “E-Verify Program”, jointly administered by the United States Department of Homeland Security and the Social Security Administration, or (ii) the “Department Program” administered by the Colorado Department of Labor and Employment in order to confirm the employment eligibility of all employees who are newly hired to perform work under this contract.  

3. The Vendor shall comply with all reasonable requests made in the course of an investigation under CRS 8-17.5-102 by the Colorado Department of Labor and Employment. If the Vendor fails to comply with any requirement of this provision or CRS 8-17.5-101 et seq., the State may terminate work for breach and the Vendor shall be liable for damages to the State.  

B. AFFIDAVIT  
   CRS 24-76.5-101 (HB 06S-1023)  

4. If the Vendor is a sole proprietor, the undersigned hereby swears or affirms under penalty of perjury under the laws of the State of Colorado that (check one):  

   ☐ I am a United States citizen, or  
   ☐ I am a Permanent Resident of the United States, or  
   ☐ I am lawfully present in the United States pursuant to Federal law.  

I understand that this sworn statement is required by law because I am a sole proprietor entering into a contract to perform work for the State of Colorado. I understand that state law requires me to provide proof that I am lawfully present in the United States prior to starting work for the State. I further acknowledge that I will comply with the requirements of CRS 24-76.5-101 et seq. and will produce the required form of identification prior to starting work. I acknowledge that making a false, fictitious, or fraudulent statement or representation in this sworn affidavit is punishable under the criminal laws of Colorado as perjury in the second degree under CRS 18-8-503 and it shall constitute a separate criminal offense each time a public benefit is fraudulently received.  

CERTIFIED and AGREED to this _____ day of ______________, __20__.  

VENDOR:  

______________________________  
Vendor Full Legal Name  

______________________________  
Signature of Authorized Representative  
Title  

State Form UI-1  
Issued 7/2008
THE GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT
DESIGN/BID/BUILD STANDARD FORMAT
(STATE FORM SC-6.23)
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Note: The sections of the General Conditions indicated in italics (Articles 35 General and 35A, 35B, 37, 38, 46, 48B, 49 and 50) are regulatory and cannot be modified except through appropriate rule making procedures through the Division of Finance and Procurement, Department of Personnel & Administration.
General Conditions of Contract

ARTICLE 1. DEFINITIONS

A. CONTRACT DOCUMENTS
   The Contract Documents consist of:
   1. Agreement (SC-6.21);
   2. Performance Bond (SC-6.22) and Labor and Material Payment Bond (SC-6.221);
   3. General and Supplementary General Conditions of the Contract (SC-6.23);
   4. Detailed Specification Requirements, including all addenda issued prior to the opening of the
      bids; and,
   5. Drawings, including all addenda issued prior to the opening of the bids.
   6. Change Orders (SC-6.31) and Amendments (SC-6.0), if any, when properly executed.

B. PROCEDURAL DOCUMENTS
   The Procedural Documents used in the administration and performance of the Agreement consist of:
   1. Authorization to Bid (SBP-6.10)
   2. Information for Bidders (SBP-6.12);
   3. Bid (SBP-6.13);
   4. Bid Bond (SBP-6.14);
   5. Notice of Award (SBP-6.15);
   6. Builder’s risk insurance certificates of insurance (ACORD 25-S);
   7. Liability and workers’ compensation certificates of insurance;
   8. Notice to Proceed (Design/Bid/Build) (SBP-6.26);
   9. Notice of Approval of Occupancy/Use (SBP-01);
   10. Notice of Partial Substantial Completion (SBP-071);
   11. Notice of Substantial Completion (SBP-07);
   12. Notice of Partial Final Acceptance (SC-6.27);
   13. Notice of Final Acceptance (SBP-6.271);
   14. Notice of Partial Contractor’s Settlement (SC-7.3);
   15. Notice of Contractor’s Settlement (SBP-7.31);
   16. Application and Certificate for Contractor’s Payment (SBP-7.2);
   17. Other procedural and reporting documents or forms referred to in the General Conditions, the
       Supplementary General Conditions, the Specifications or required by the State Buildings
       Programs or the Principal Representative, including but not necessarily limited to Pre-
       Acceptance Check List (SBP-05) and Pre-Acceptance Punch List (SBP-06), and the Building
       Inspection Record (SBP-BIR). A list of the current standard State Buildings Programs forms
       applicable to this Contract may be obtained from the Principal Representative on request.

C. DEFINITIONS OF WORDS AND TERMS USED
   1. AGREEMENT. The term “Agreement” shall mean the written agreement entered into by the
      State of Colorado acting by and through the Principal Representative and the Contractor for the
      performance of the Work and payment therefore, on State Form SC-6.21. The term
Agreement when used without reference to State Form SC-6.21 may also refer to the entirety of the parties’ agreement to perform the Work described in the Contract Documents or reasonably inferable there from. The term “Contract” shall be interchangeable with this latter meaning of the term Agreement

2. ARCHITECT/ENGINEER. The term “Architect/Engineer” shall mean either the architect of record or the engineer of record under contract to the State of Colorado for the Project identified in the Contract Documents.

3. OCCUPANCY. The term “Occupancy” means occupancy taken by the State as Owner after the Date of Substantial Completion at a time when a building or other discrete physical portion of the Project is used for the purpose intended. The Date of Occupancy shall be the date of such first use, but shall not be prior to the date of execution of the Notice of Approval of Occupancy/Use. Prior to the date of execution of a Notice of Approval of Occupancy/Use, the state shall have no right to occupy and the project may not be considered safe for occupancy for the intended use.

4. CHANGE ORDER. The term “Change Order” means a written order, signed by a Procurement Officer, directing the Contractor to make changes in the Work, in accordance with Article 35A, The Value of Changed Work.

5. COLORADO LABOR. The term “Colorado labor” shall be defined, as provided in § 8-17-101, C.R.S., as any person who is a resident of the state of Colorado, at the time of employment, without discrimination as to race, color, creed, sex, age, or religion except when sex or age is a bona fide occupational qualification, or shall have such other meaning as the term may otherwise be given in § 8-17-101, C.R.S., as amended.

6. CONTRACTOR. The word “Contractor” shall mean the person, company, firm, corporation or other legal entity entering into a contract with the State of Colorado acting by and through the Principal Representative.

7. DAYS. The term “days” whether singular or plural shall mean calendar days unless expressly stated otherwise. Where the term “business days” is used it shall mean business days of the State of Colorado.

8. DRAWINGS. The term “Drawings” shall mean all drawings approved by appropriate State officials which have been prepared by the Architect/Engineer showing the work to be done, except that where a list of drawings is specifically enumerated in the Supplementary General Conditions or division 1 of the Specifications, the term shall mean the drawings so enumerated, including all addenda drawings.

9. EMERGENCY FIELD CHANGE ORDER. The term “Emergency Field Change Order” shall mean a written change order for extra work or a change in the work necessitated by an emergency as defined in Article 35C executed on State form SC 6.31 and identified as an Emergency Field Change Order. The use of such orders is limited to emergencies and to the amounts shown in Article 35C.

10. FINAL ACCEPTANCE. The terms “final acceptance” or “finally complete” mean the stage in the progress of the work, after substantial completion, when all remaining items of work have been completed, all requirements of the Contract Documents are satisfied and the Notice of Acceptance can be issued. Discrete physical portions of the Project may be separately and partially deemed finally complete at the discretion of the Principal Representative when that portion of the Project reaches such stage of completion and a partial Notice of Acceptance can be issued.

11. NOTICE. The term “Notice” shall mean any communication in writing from either contracting party to the other by such means of delivery that receipt cannot properly be denied. Notice shall be provided to the person identified to receive it in Article 54E, Notice Identification, or to such other person as either party identifies in writing to receive Notice. Notice by facsimile transmission where proper transmission is evidence shall be adequate where facsimile numbers are included in Article 54E. Notwithstanding an email delivery or return receipt, email Notice shall not be adequate. Acknowledgment of receipt of a voice message shall not be deemed to waive the requirement that Notice, where required, shall be in writing.
12. OWNER. The term “Owner” shall mean the Principal Representative.

13. PRINCIPAL REPRESENTATIVE. The term “Principal Representative” shall be defined, as provided in § 24-30-1301(11), C.R.S., as the governing board of a state department, institution, or agency; or if there is no governing board, then the executive head of a state department, institution, or agency, as designated by the governor or the general assembly and as specifically identified in the Contract Documents, or shall have such other meaning as the term may otherwise be given in § 24-30-1301(11), C.R.S., as amended. The Principal Representative may delegate authority. The Contractor shall have the right to inquire regarding the delegated authority of any of the Principal Representative’s representatives on the project and shall be provided with a response in writing when requested.

14. PROCUREMENT OFFICER. The term “Procurement Officer” means any person duly authorized to enter into and administer contracts and make written determinations with respect thereto. “Procurement Officer” includes an authorized representative of the Principal Representative acting within the limits of his or her authority.

15. PRODUCT DATA. The term “Product Data” shall mean all submittals in the form of printed manufacturer’s literature, manufacturer’s specifications, and catalog cuts.

16. REASONABLY INFERABLE: The phrase “reasonably inferable” means that if an item or system is either shown or specified, all material and equipment normally furnished with such items or systems and needed to make a complete installation shall be provided whether mentioned or not, omitting only such parts as are specifically excepted, and shall include only components which the Contractor could reasonably anticipate based on his or her skill and knowledge using an objective, industry standard, not a subjective standard. This term takes into consideration the normal understanding that not every detail is to be given on the Drawings and Specifications. The phrase shall not, however, be construed to make the Contractor, rather than the Architect/Engineer, responsible for producing the Drawings and Specifications.

17. SAMPLES. The term “Samples” shall mean examples of materials or work provided to establish the standard by which the Work will be judged.

18. SC. The term “SC” means “State Contract” which is used in connection with labeling applicable State form documents (e.g. “SC 6.23” is the State form number for these General Conditions of the Contract).

19. SBP. The term “SBP” means “State Buildings”, which is used in connection with labeling applicable State form documents (e.g., “SBP-01” is the form number for Notice of Approval of Occupancy/Use).

20. SHOP DRAWINGS. The term “Shop Drawings” shall mean any and all detailed drawings prepared and submitted by Contractor, Subcontractor at any tier, vendors or manufacturers providing the products and equipment specified on the Drawings or called for in the Specifications.

21. SPECIFICATIONS. The term “Specifications” shall mean the requirements of Divisions 01 through 49 of the project manual prepared by the Architect/Engineer describing the work to be accomplished.

22. STATE BUILDINGS PROGRAMS. The term “State Buildings Programs” is the shortened name of the division of State Buildings Programs. It shall refer to the division of the executive department of State government responsible for project administration, review, approval and coordination of plans, construction procurement policy, contractual procedures, and code compliance and inspection of all buildings, public works and improvements erected for state purposes; except public roads and highways and projects under the supervision of the division of wildlife and the division of parks and outdoor recreation as provided in § 24-30-1301, et seq., C.R.S. The term State Buildings Programs shall also mean that individual within a State Department agency or institution, including institutions of higher education, who has signed an agreement accepting delegation to perform all or part of the responsibilities and functions of State Buildings Programs.

23. SUBMITTALS. The term “submittals” means drawings, lists, tables, documents and samples prepared by the Contractor to facilitate the progress of the work as required by these General Conditions or the Drawings and Specifications. They consist of Shop Drawings, Product Data, Samples, and various administrative support documents including but not limited to lists of subcontractors, construction progress schedules, schedules of values, applications for...
payment, inspection and test results, requests for information, various document logs, and as-
built drawings. Submittals are required by the Contract Documents, but except to the extent
expressly specified otherwise are not themselves a part of the Contract Documents.

24. SUBSTANTIAL COMPLETION. The terms “substantial completion” or “substantially complete ”
mean the stage in the progress of the work when the construction is sufficiently complete, in
accordance with the Contract Documents as modified by any Change Orders, so that the Work,
or at the discretion of the Principal Representative, any designated portion thereof, is available
for its intended use by the Principal Representative and a Notice of Substantial Completion can
be issued. Portions of the Project may, at the discretion of the Principal Representative, be
designated as substantially complete.

25. SURETY. The term “Surety” shall mean the company providing the labor and material
payment and performance bonds for the Contractor as obligor.

26. WORK. The term “Work” shall mean all or part of the labor, materials, equipment, and other
services required by the Contract Documents or otherwise required to be provided by the
Contractor to meet the Contractor’s obligations under the Contract.

ARTICLE 2. EXECUTION, CORRELATION, INTENT OF DOCUMENTS, COMMUNICATION AND
COOPERATION

A. EXECUTION
The Contractor, within ten (10) days from the date of Notice of Award, will be required to:
1. Execute the Agreement, State Form SC-6.21;
2. Furnish fully executed Performance and Labor and Material Payment Bonds on State Forms
   SC-6.22 and SC-6.221; and
3. Furnish certificates of insurance evidencing all required insurance on standard Acord forms
designed for such purpose.
4. Furnish certified copies of any insurance policies requested by the Principal Representative.

B. CORRELATION
By execution of the Agreement the Contractor represents that the Contractor has visited the site, has
become familiar with local conditions and local requirements under which the Work is to be performed,
including the building code programs of the State Buildings Program as implemented by the Principal
Representative, and has correlated personal observations with the requirements of the Contract
Documents.

C. INTENT OF DOCUMENTS
The Contract Documents are complementary, and what is called for by any one document shall be as
binding as if called for by all. The intention of the documents is to include all labor, materials,
equipment and transportation necessary for the proper execution of the Work. Words describing
materials or work which have a well-known technical or trade meaning shall be held to refer to such
recognized standards.

In any event, if any error exists, or appears to exist, in the requirements of the Drawings or
Specifications, or if any disagreement exists as to such requirements, the Contractor shall have the
same explained or adjusted by the Architect/Engineer before proceeding with the work in question. In
the event of the Contractor’s failure to give prior written Notice of any such errors or disagreements
of which the Contractor or the Subcontractors at any tier are aware, the Contractor shall, at no additional
cost to the Principal Representative, make good any damage to, or defect in, work which is caused by
such omission.

Where a conflict occurs between or within standards, Specifications or Drawings, which is not resolved
by reference to the precedence between the Contract Documents, the more stringent or higher quality
requirements shall apply so long as such more stringent or higher quality requirements are reasonably
inferable. The Architect/Engineer shall decide which requirements will provide the best installation.
With the exception noted in the following paragraph, the precedence of the Contract Documents is in
the following sequence:
1. The Agreement (SC-6.21);
2. The Supplementary General Conditions, if any;
3. The General Conditions (SC-6.23); and
4. Drawings and Specifications, all as modified by any addenda.

Change Orders and Amendments, if any, to the Contract Documents take precedence over the original Contract Documents.

Notwithstanding the foregoing order of precedence, the Special Provisions of Article 52 of the General Conditions, Special Provisions, shall take precedence, rule and control over all other provisions of the Contract Documents.

Unless the context otherwise requires, form numbers in this document are for convenience only. In the event of any conflict between the form required by name or context and the form required by number, the form required by name or context shall control. The Contractor may obtain State forms from the Principal Representative upon request.

D. PARTNERING, COMMUNICATIONS, AND COOPERATION

In recognition of the fact that conflicts, disagreements and disputes often arise during the performance of construction contracts, the Contractor and the Principal Representative aspire to encourage a relationship of open communication and cooperation between the employees and personnel of both, in which the objectives of the Contract may be better achieved and issues resolved in a more fully informed atmosphere.

The Contractor and the Principal Representative each agree to assign an individual who shall be fully authorized to negotiate and implement a voluntary partnering plan for the purpose of facilitating open communications between them. Within thirty days (30) of the Notice to Proceed, the assigned individuals shall meet to discuss development of an informal agreement to accomplish these goals.

The assigned individuals shall endeavor to reach an informal agreement, but shall have no such obligation. Any plans these parties voluntarily agree to implement shall result in no change to the contract amount, and no costs associated with such plan or its development shall be recoverable under any contract clause. In addition, no plan developed to facilitate open communication and cooperation shall alter, amend or waive any of the rights or duties of either party under the Contract unless and except by written Amendment to the Contract, nor shall anything in this clause or any subsequently developed partnering plan be deemed to create fiduciary duties between the parties unless expressly agreed in a written Amendment to the Contract. It is also recognized that projects with relatively low contract values may not justify the expense or special efforts required. In the case of small projects with an initial Contract value under $500,000, the requirements of the preceding paragraph shall not apply.

ARTICLE 3. COPIES FURNISHED

The Contractor will be furnished, free of charge, the number of copies of Drawings and Specifications as specified in the Contract Documents, or if no number is specified, all copies reasonably necessary for the execution of the work.

ARTICLE 4. OWNERSHIP OF DRAWINGS

Drawings or Specifications, or copies of either, furnished by the Architect/Engineer, are not to be used on any other work. At the completion of the Work, at the written request of the Architect/Engineer, the Contractor shall endeavor to return all Drawings and Specifications.

The Contractor may retain the Contractor’s Contract Document set, copies of Drawings and Specifications used to contract with others for any portion of the Work and a marked up set of as-built drawings.
ARTICLE 5. ARCHITECT/ENGINEER’S STATUS
The Architect/Engineer is the representative of the Principal Representative for purposes of administration of the Contract, as provided in the Contract Documents and the Agreement. In case of termination of employment or the death of the Architect/Engineer, the Principal Representative will appoint a capable Architect/Engineer against whom the Contractor makes no reasonable objection, whose status under the Contract shall be the same as that of the former Architect/Engineer.

ARTICLE 6. ARCHITECT/ENGINEER DECISIONS AND JUDGMENTS, ACCESS TO WORK AND INSPECTION

A. DECISIONS
The Architect/Engineer shall, within a reasonable time, make decisions on all matters relating to the execution and progress of the Work or the interpretation of the Contract Documents, and in the exercise of due diligence shall be reasonably available to the Contractor to timely interpret and make decisions with respect to questions relating to the design or concerning the Contract Documents.

B. JUDGMENTS
The Architect/Engineer is, in the first instance, the judge of the performance required by the Contract Documents as it relates to compliance with the Drawings and Specifications and quality of workmanship and materials.

The Architect/Engineer shall make judgments regarding whether directed work is extra or outside the scope of Work required by the Contract Documents at the time such direction is first given. If, in the Contractor’s judgment, any performance directed by the Architect/Engineer is not required by the Contract Documents or if the Architect/Engineer does not make the judgment required, it shall be a condition precedent to the filing of any claim for additional cost related to such directed work that the Contractor, before performing such work, shall first obtain in writing, the Architect/Engineer’s written decision that such directed work is included in the performance required by the Contract Documents. If the Architect/Engineer’s direction to perform the work does not state that the work is included in the performance required by the Contract Documents, the Contractor shall, in writing, request the Architect/Engineer to advise in writing whether the directed work will be considered extra work or work included in the performance required by the Contract Documents.

The Architect/Engineer shall respond to any such written request for such a decision within three (3) business days and if no response is provided, or if the Architect/Engineer’s written decision is to the effect that the work is included in the performance required by the Contract Documents, the Contractor may file with the Principal Representative and the Architect/Engineer a Notice of claim in accordance with Article 36, Claims. Whether or not a Notice of claim is filed, the Contractor shall proceed with the ordered work. Disagreement with the decision of the Architect/Engineer shall not be grounds for the Contractor to refuse to perform the work directed or to suspend or terminate performance.

C. ACCESS TO WORK
The Architect/Engineer, the Principal Representative and representatives of State Buildings Programs shall at all times have access to the work. The Contractor shall provide proper facilities for such access and for their observations or inspection of the work.

D. INSPECTION
The Architect/Engineer has agreed to make, or that structural, mechanical, electrical engineers or other consultants will make, periodic visits to the site to generally observe the progress and quality of the Work to determine in general if the Work is proceeding in accordance with the Contract Documents. Observation may extend to all or any part of the Work and to the preparation, fabrication or manufacture of materials.

Without in any way meaning to be exclusive or to limit the responsibilities of the Architect/Engineer or the Contractor, the Architect/Engineer has agreed to observe, among other aspects of the Work, the following for compliance with the Contract Documents:
1. Bearing surfaces of excavations before concrete is placed based upon the findings and recommendations of the Principal Representative’s soils engineering consultant;
2. Reinforcing steel after installation and before concrete is poured;
3. Structural concrete;
4. Laboratory reports on all concrete testing based upon the findings and recommendations of the Principal Representative’s testing consultant;
5. Structural steel during and after erection and prior to its being covered or enclosed;
6. Steel welding; Principal Representative will furnish steel welding inspection consultant/agency if required or necessary for the project;
7. Mechanical and plumbing work following its installation and prior to its being covered or enclosed;
8. Electrical work following its installation and prior to its being covered or enclosed;
9. Compaction testing reports based upon the findings and recommendations of the Principal Representative’s testing consultant; and
10. Any special or quality control testing required in the Contract Documents provided by the Principal Representative’s testing consultant.

If the Specifications, the Architect/Engineer’s instructions, laws, ordinances of any public authority require any work to be specifically tested or approved, the Contractor shall give the Architect/Engineer timely notice of its readiness for observation by the Architect/Engineer or inspection by another authority, and if the inspection is by another authority, of the date fixed for such inspection, required certificates of inspection being secured by the Contractor. The Contractor shall give all required Notices to the Principal Representative or his or her designee for inspections required for the building inspection program. It shall be the responsibility of the Contractor to determine the Notice required by the State pursuant to Building Inspection Record for the Project, according to State form SBP-B.I.R., or the equivalent form required by the Principal Representative as approved by the State Buildings Program. If any such work is covered up without approval or consent of the Architect/Engineer or prior to any building code inspection, it must, if required by the Architect/Engineer, the Principal Representative or the State Buildings Programs, be uncovered for examination, at the Contractor’s expense. If such work is found to be not in accordance with the Contract Documents, the Contractor shall pay such costs, unless he or she shall show that the defect in the work was caused by another contractor engaged by the Principal Representative. In that event, the Principal Representative shall pay such cost. In addition, examination of questioned work may be ordered, and if so ordered, the work must be uncovered by the Contractor. If such work be found in accordance with the Contract Documents, the Contractor shall be reimbursed the cost of examination and replacement.

ARTICLE 7. CONTRACTOR’S SUPERINTENDENCE AND SUPERVISION
The Contractor shall employ, and keep present on the Project during its progress, a competent superintendent and any necessary assistants, all satisfactory to the Architect/Engineer and the Principal Representative. The superintendent shall not be changed except with the consent of the Architect/Engineer and the Principal Representative, unless the superintendent proves to be unsatisfactory to the Contractor and ceases to be in his or her employ. The superintendent shall represent the Contractor in his or her absence and all directions given to the superintendent shall be as binding as if given to the Contractor. Directions received by the superintendent shall be documented by the superintendent and confirmed in writing with the Contractor.

The Contractor shall give efficient supervision to the Work, using his or her best skill and attention. He or she shall carefully study and compare all Drawings, Specifications and other written instructions and shall without delay report any error, inconsistency or omission which he or she may discover in writing to the Architect/Engineer. The Contractor shall not be liable to the Principal Representative for damage to the extent it results from errors or deficiencies in the Contract Documents or other instructions by the Architect/Engineer, unless the Contractor knew or had reason to know, that damage would result by proceeding and the Contractor fails to so advise the Architect/Engineer.
The superintendent shall see that the Work is carried out in accordance with the Contract Documents and in a uniform, thorough and first-class manner in every respect. The Contractor’s superintendent shall establish all lines, levels, and marks necessary to facilitate the operations of all concerned in the Contractor’s Work. The Contractor shall lay out all work in a manner satisfactory to the Architect/Engineer, making permanent records of all lines and levels required for excavation, grading, foundations, and for all other parts of the Work.

ARTICLE 8. MATERIALS AND EMPLOYEES

Unless otherwise stipulated, the Contractor shall provide and pay for all materials, labor, water, tools, equipment, light, power, transportation and other facilities necessary for the execution and completion of the Work.

Unless otherwise specified, all materials shall be new and both workmanship and materials shall be first class and of uniform quality. The Contractor shall, if required, furnish satisfactory evidence as to the kind and quality of materials.

The Contractor is fully responsible for all acts and omissions of the Contractor’s employees and shall at all times enforce strict discipline and good order among employees on the site. The Contractor shall not employ on the Work any person reasonably deemed unfit by the Principal Representative or anyone not skilled in the work assigned to him.

ARTICLE 9. SURVEYS, PERMITS, LAWS, TAXES AND REGULATIONS

A. SURVEYS

The Principal Representative shall furnish all surveys, property lines and bench marks deemed necessary by the Architect/Engineer, unless otherwise specified.

B. PERMITS AND LICENSES

Permits and licenses necessary for the prosecution of the Work shall be secured and paid for by the Contractor. Unless otherwise specified in the Specifications, no local municipal or county building permit shall be required. However, State Buildings Programs requires each Principal Representative to administer a building code inspection program, the implementation of which may vary at each agency or institution of the State. The Contractors’ employees shall become personally familiar with these local conditions and requirements and shall fully comply with such requirements. State electrical and plumbing permits are required, unless the requirement to obtain such permits is altered by State Building’s Programs. The Contractor shall obtain and pay for such permits.

Easements for permanent structures or permanent changes in existing facilities shall be secured and paid for by the Principal Representative, unless otherwise specified.

C. TAXES

1. REFUND OF SALES AND USE TAXES

The Contractor shall pay all local taxes required to be paid, including but not necessarily limited to all sales and use taxes. If requested by the Principal Representative prior to issuance of the Notice to Proceed or directed in the Supplementary General Conditions or the Specifications, the Contractor shall maintain records of such payments in respect to the Work, which shall be separate and distinct from all other records maintained by the Contractor, and the Contractor shall furnish such data as may be necessary to enable the State of Colorado, acting by and through the Principal Representative, to obtain any refunds of such taxes which may be available under the laws, ordinances, rules or regulations applicable to such taxes. When so requested or directed, the Contractor shall require Subcontractors at all tiers to pay all local sales and use taxes required to be paid and to maintain records and furnish the Contractor with such data as may be necessary to obtain refunds of the taxes paid by such Subcontractors. No State sales and use taxes are to be paid on material to be used in this Project. On application by the purchaser or seller, the Department of Revenue shall issue to a Contractor or to a
Subcontractor at any tier, a certificate or certificates of exemption per § 39-26-114(1)(d), C.R.S., and § 39-26-203, C.R.S.

2. FEDERAL TAXES
The Contractor shall exclude the amount of any applicable federal excise or manufacturers’ taxes from the proposal. The Principal Representative will furnish the Contractor, on request exemption certificates.

D. LAWS AND REGULATIONS
The Contractor shall give all notices and comply with all laws, ordinances, rules and regulations bearing on the conduct of the Work as drawn or specified. If the Contractor observes that the Drawings or Specifications require work which is at variance therewith, the Contractor shall without delay notify the Architect/Engineer in writing and any necessary changes shall be adjusted as provided in Article 35, Changes In The Work.

The Contractor shall bear all costs arising from the performance of work required by the Drawings or Specifications that the Contractor knows to be contrary to such laws, ordinances, rules or regulations, if such work is performed without giving Notice to the Architect/Engineer.

ARTICLE 10. PROTECTION OF WORK AND PROPERTY

A. GENERAL PROVISIONS
The Contractor shall continuously maintain adequate protection of all work and materials, protect the property from injury or loss arising in connection with this Contract and adequately protect adjacent property as provided by law and the Contract Documents. The Contractor shall make good any damage, injury or loss, except to the extent:

1. Directly due to errors in the Contract Documents;
2. Caused by agents or employees of the Principal Representative; and,
3. Due to causes beyond the Contractor’s control and not to fault or negligence; provided such damage, injury or loss would not be covered by the insurance required to be carried by the Contractor;

B. SAFETY PRECAUTIONS
The Contractor shall take all necessary precautions for the safety of employees on the Project, and shall comply with all applicable provisions of federal, State and municipal safety laws and building codes to prevent accidents or injury to persons on, about or adjacent to the premises where the Work is being performed. He or she shall erect and properly maintain at all times, as required by the conditions and progress of the Work, all necessary safeguards for the protection of workers and the public and shall post danger signs warning against the hazards created by such features of construction as protruding nails, hoists, well holes, elevator hatchways, scaffolding, window openings, stairways and falling materials; and he or she shall designate a responsible member of his or her organization on the Project, whose duty shall be the prevention of accidents. The name and position of any person so designated shall be reported to the Architect/Engineer by the Contractor.

The Contractor shall provide all necessary bracing, shoring and tying of all structures, decks and framing to prevent any structural failure of any material which could result in damage to property or the injury or death of persons; take all precautions to insure that no part of any structure of any description is loaded beyond its carrying capacity with anything that will endanger its safety at any time during the execution of this Contract; and provide for the adequacy and safety of all scaffolding and hoisting equipment. The Contractor shall not permit open fires within the building enclosure. The Contractor shall construct and maintain all necessary temporary drainage and do all pumping necessary to keep excavations and floors, pits and trenches free of water. The Contractor shall be solely responsible for all construction means, methods, techniques, sequences and procedures, and for coordinating all portions of the Work, except as otherwise noted.
The Contractor shall take due precautions when obstructing sidewalks, streets or other public ways in any manner, and shall provide, erect and maintain barricades, temporary walkways, roadways, trench covers, colored lights or danger signals and any other devices necessary or required to assure the safe passage of pedestrians and automobiles.

C. **EMERGENCIES**

In an emergency affecting the safety of life or of the Work or of adjoining property, the Contractor without special instruction or authorization from the Architect/Engineer or Principal Representative, is hereby permitted to act, at his or her discretion, to prevent such threatened loss or injury; and he or she shall so act, without appeal, if so authorized or instructed. Provided the Contractor has no responsibilities for the emergency, if the Contractor incurs additional cost not otherwise recoverable from insurance or others on account of any such emergency work, the Contract sum shall be equitably adjusted in accordance with Article 35, Changes In The Work.

**ARTICLE 11. DRAWINGS AND SPECIFICATIONS ON THE WORK**

The Contractor shall keep on the job site one copy of the Contract Documents in good order, including current copies of all Drawings and Specifications for the Work, and any approved Shop Drawings, Product Data or Samples, and as-built drawings. As-built drawings shall be updated weekly by the Contractor and Subcontractors to reflect actual constructed conditions including dimensioned locations of underground work and the Contractor's failure to maintain such updates may be grounds to withhold portions of payments otherwise due in accordance with Article 33, Payments Withheld. All such documents shall be available to the Architect/Engineer and representatives of the State. In addition, the Contractor shall keep on the job site one copy of all approved addenda, Change Orders and requests for information issued for the Work.

The Contractor shall develop procedures to insure the currency and accuracy of as-built drawings and shall maintain on a current basis a log of requests for information and responses thereto, a Shop Drawing and Product Data submittal log, and a Sample submittal log to record the status of all necessary and required submittals.

**ARTICLE 12. REQUESTS FOR INFORMATION AND SCHEDULES**

A. **REQUESTS FOR INFORMATION**

The Architect/Engineer shall furnish additional instructions with reasonable promptness, by means of drawings or otherwise, necessary for the proper execution of the Work. All such drawings and instructions shall be consistent with the Contract Documents and reasonably inferable there from. The Architect/Engineer shall determine what additional instructions or drawings are necessary for the proper execution of the Work.

The Work shall be executed in conformity with such instructions and the Contractor shall do no work without proper drawings, specifications or instructions. If the Contractor believes additional instructions, specifications or drawings are needed for the performance of any portion of the Work, the Contractor shall give Notice of such need in writing through a request for information furnished to the Architect/Engineer sufficiently in advance of the need for such additional instructions, specifications or drawings to avoid delay and to allow the Architect/Engineer a reasonable time to respond. The Contractor shall maintain a log of the requests for information and the responses provided.

B. **SCHEDULES**

1. **SUBMITTAL SCHEDULES**

Prior to filing the Contractor’s first application for payment, a schedule shall be prepared which may be preliminary to the extent required, fixing the dates for the submission and initial review of required Shop Drawings, Product Data and Samples for the beginning of manufacture and installation of materials, and for the completion of the various parts of the Work. It shall be prepared so as to cause no delay in the Work or in the work of any other contractor. The schedule shall be subject to change from time to time in accordance with the progress of the Work, and it shall be subject to the review and approval by the Architect/Engineer. It shall fix the dates at which the various Shop Drawings Product Data and Samples will be required from
the Architect/Engineer. The Architect/Engineer, after review and agreement as to the time provided for initial review, shall review and comment on the Shop Drawings, Product Data and Samples in accordance with that schedule. The schedule shall be finalized, prepared and submitted with respect to each of the elements of the Work in time to avoid delay, considering reasonable periods for review, manufacture or installation.

At the time the schedule is prepared, the Contractor, the Architect/Engineer and Principal Representative shall jointly identify the Shop Drawing, Product Data and Samples, if any, which the Principal Representative shall receive simultaneously with the Architect/Engineer for the purposes of owner coordination with existing facility standards and systems. The Contractor shall furnish a copy for the Principal Representative when so requested. Transmittal of Shop Drawings and Product Data copies to the Principal Representative shall be solely for the convenience of the Principal Representative and shall neither create nor imply responsibility or duty of review by the Principal Representative.

The Contractor may also, or at the direction of the Principal Representative at any time shall, prepare and maintain a schedule, which may also be preliminary and subject to change to the extent required, fixing the dates for the initial responses to requests for information or for detail drawings which will be required from the Architect/Engineer to allow the beginning of manufacture, installation of materials and for the completion of the various parts of the Work. The schedule shall be subject to review and approval by the Architect/Engineer. The Architect/Engineer shall, after review and agreement, furnish responses and detail drawings in accordance with that schedule. Any such schedule shall be prepared and approved in time to avoid delay, considering reasonable periods for review, manufacture or installation, but so long as the request for information schedule is being maintained, it shall not be deemed to transfer responsibility to the Contractor for errors or omissions in the Contract Documents where circumstances make timely review and performance impossible.

The Architect/Engineer shall not unreasonably withhold approval of the Contractor’s schedules and shall inform the Contractor and the Principal Representative of the basis of any refusal to agree to the Contractor’s schedules. The Principal Representative shall attempt to resolve any disagreements.

2. SCHEDULE OF VALUES

Within twenty-one (21) calendar days after the date of the Notice to Proceed, the Contractor shall submit to the Architect/Engineer and Principal Representative, for approval, and to the State Buildings Programs when specifically requested, a complete itemized schedule of the values of the various parts of the Work, as estimated by the Contractor, aggregating the total price. The schedule of values shall be in such detail as the Architect/Engineer or the Principal Representative shall require, prepared on forms acceptable to the Principal Representative. It shall, at a minimum, identify on a separate line each division of the Specifications including the general conditions costs to be charged to the Project. The Contractor shall revise and resubmit the schedule of values for approval when, in the opinion of the Architect/Engineer or the Principal Representative, such resubmittal is required due to changes or modifications to the Contract Documents or the Contract sum.

The total cost of each line item so separately identified shall, when requested by the Architect/Engineer or the Principal Representative, be broken down into reasonable estimates of the value of:

a. Material, which shall include the cost of material actually built into the Project plus any local sales or use tax paid thereon; and,

b. Labor and other costs.

The cost of subcontracts shall be incorporated in the Contractor’s schedule of values, and when requested by the Architect/Engineer or the Principal Representative, shall be separately shown as line items.
The Architect/Engineer shall review the proposed schedules and approve it after consultation with the Principal Representative, or advise the Contractor of any required revisions within ten (10) days of its receipt. In the event no action is taken on the submittal within ten days, the Contractor may utilize the schedule of values as its submittal for payment until it is approved or until revisions are requested.

When the Architect/Engineer deems it appropriate to facilitate certification of the amounts due to the Contractor, further breakdown of subcontracts, including breakdown by labor and materials, may be directed.

This schedule of values, when approved, will be used in preparing Contractor’s applications for payment on State Form SC-7.2, Application for Payment.

3. CONSTRUCTION SCHEDULES

Within twenty-one (21) calendar days after the date of the Notice to Proceed, the Contractor shall submit to the Architect/Engineer and the Principal Representative, and to the State Buildings Programs when specifically requested, on a form acceptable to them, an overall timetable of the construction schedule for the Project. Unless the Supplementary General Conditions or the Specifications allow scheduling with bar charts or other less sophisticated scheduling tools, the Contractor’s schedule shall be a critical-path method (CPM) construction schedule. The CPM schedule shall start with the date of the Notice to Proceed and include submittals activities, the various construction activities, change order work (when applicable), close-out, testing, demonstration of equipment operation when called for in the Specifications, and acceptance. The CPM shall at a minimum correlate to the schedule of values line items and shall be cost loaded if requested by the Architect/Engineer or Principal Representative. The completion time shall be the time specified in the Agreement and all Project scheduling shall allocate float utilizing the full period available for construction as specified in the Agreement on State Form SC 6.13, without indication of early completion, unless such earlier completion is approved in writing by the Principal Representative and State Building Programs.

The time shown between the starting and completion dates of the various elements within the construction schedule shall represent one hundred per cent (100%) completion of each element.

All other elements of the CPM schedule shall be as required by the Specifications. In addition, the Contractor shall submit monthly updates of the construction schedule. These updates shall reflect the Contractor’s “work in place” progress.

When requested by the Architect/Engineer, the Principal Representative or the State Buildings Programs, the Contractor shall revise the construction schedule to reflect changes in the schedule of values.

When the testing of materials is required by the Specifications, the Contractor shall also prepare and submit to the Architect/Engineer and the Principal Representative a schedule for testing in accordance with Article 14, Samples and Testing.

ARTICLE 13. SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

A. SUBMITTAL PROCESS

The Contractor shall check and field verify all dimensions. The Contractor shall check, approve and submit to the Architect/Engineer in accordance with the schedule described in Article 12, Requests for Information and Schedules, all Shop Drawings, Product Data and Samples required by the specifications or required by the Contractor for the work of the various trades. All Drawings and Product Data shall contain identifying nomenclature and each submittal shall be accompanied by a letter of transmittal identifying in detail all enclosures. The number of copies of Shop Drawings and
Product Data to be submitted shall be as specified in the Specifications and if no number is specified then three copies shall be submitted.

The Architect/Engineer shall review and comment on the Shop Drawings and Product Data within the time provided in the agreed upon schedule for conformance with information given and the design concept expressed in, or reasonably inferred from, the Contract Documents. The nature of all corrections to be made to the Shop Drawings and Product Data, if any, shall be clearly noted, and the submittals shall be returned to the Contractor for such corrections. If a change in the scope of the Work is intended by revisions requested to any Shop Drawings and Product Data, the Contractor shall be requested to prepare a change proposal in accordance with Article 35, Changes In The Work. On resubmitted Shop Drawings, Product Data or Samples, the Contractor shall direct specific attention in writing on the transmittal cover to revisions other than those corrections requested by the Architect/Engineer on any previously checked submittal. The Architect/Engineer shall promptly review and comment on, and return, the resubmitted items.

The Contractor shall thereafter furnish such other copies in the form approved by the Architect/Engineer as may be needed for the prosecution of the work.

B. FABRICATION AND ORDERING
Fabrication shall be started by the Contractor only after receiving approved Shop Drawings from the Architect/Engineer. Materials shall be ordered in accordance with approved Product Data. Work which is improperly fabricated, whether through incorrect Shop Drawings, faulty workmanship or materials, will not be acceptable.

C. DEVIATIONS FROM DRAWINGS OR SPECIFICATIONS
The review and comments of the Architect/Engineer of Shop Drawings, Product Data or Samples shall not relieve the Contractor from responsibility for deviations from the Drawings or Specifications, unless he or she has in writing called the attention of the Architect/Engineer to such deviations at the time of submission, nor shall it relieve the Contractor from responsibility for errors of any sort in Shop Drawings or Product Data. Review and comments on Shop Drawings or Product Data containing identified deviations from the Contract Documents shall not be the basis for a Change Order or a claim based on a change in the scope of the Work unless Notice is given to the Architect/Engineer and Principal Representative of all additional costs, time and other impacts of the identified deviation by bring it to their attention in writing at the time the submittals are made, and any subsequent change in the Contract sum or the Contract time shall be limited to cost, time and impacts so identified.

D. CONTRACTOR REPRESENTATIONS
By preparing, approving, and/or submitting Shop Drawings, Product Data and Samples, the Contractor represents that the Contractor has determined and verified all materials, field measurements, and field construction criteria related thereto, and has checked and co-ordinated the information contained within each submittal with the requirements of the Work, the Project and the Contract Documents and prior reviews and approvals.

ARTICLE 14. SAMPLES AND TESTING
A. SAMPLES
The Contractor shall furnish for approval, with such promptness as to cause no delay in his or her work or in that of any other Contractor, all Samples as directed by the Architect/Engineer. The Architect/Engineer shall check and approve such Samples, with reasonable promptness, but only for conformance with the design intent of the Contract Documents and the Project, and for compliance with any submission requirements given in the Contract Documents.

B. TESTING - GENERAL
The Contractor shall provide such equipment and facilities as the Architect/Engineer may require for conducting field tests and for collecting and forwarding samples to be tested. Samples themselves shall not be incorporated into the Work after approval without the permission of the Architect/Engineer.
All materials or equipment proposed to be used may be tested at any time during their preparation or use. The Contractor shall furnish the required samples without charge and shall give sufficient Notice of the placing of orders to permit the testing thereof. Products may be sampled either prior to shipment or after being received at the site of the Work.

Tests shall be made by an accredited testing laboratory. Except as otherwise provided in the Specifications, sampling and testing of all materials, and the laboratory methods and testing equipment, shall be in accordance with the latest standards and tentative methods of the American Society of Testing Materials (ASTM). The cost of testing which is in addition to the requirements of the Specifications shall be paid by the Contractor if so directed by the Architect/Engineer, and the Contract sum shall be adjusted accordingly by Change Order; provided however, that whenever testing shows portions of the Work to be deficient, all costs of testing including that required to verify the adequacy of repair or replacement work shall be the responsibility of the Contractor.

C. TESTING - CONCRETE AND SOILS
Unless otherwise specified or provided elsewhere in the Contract Documents, the Principal Representative will contract for and pay for the testing of concrete and for soils compaction testing through an independent laboratory or laboratories selected and approved by the Principal Representative. The Contractor shall assume the responsibility of arranging, scheduling and coordinating the concrete sample collection efforts and soils compaction efforts. Testing shall be performed in accordance with the requirements of the Specifications, and if no requirements are specified, the Contractor shall request instructions and testing shall be as directed by the Architect/Engineer or the soils engineer, as applicable, and in accordance with standard industry practices.

The Principal Representative and the Architect/Engineer shall be given reasonable advance notice of each concrete pour and reserve the right to either increase or decrease the number of cylinders or the frequency of tests.

Soil compaction testing shall be at random locations selected by the soils engineer. In general, soils compaction testing shall be as directed by the soils engineer and shall include all substrate prior to backfill or construction.

D. TESTING - OTHER
Additional testing required by the Specifications will be accomplished and paid for by the Principal Representative in a manner similar to that for concrete and soils unless noted otherwise in the Specifications. In any case, the Contractor will be responsible for arranging, scheduling and coordinating additional tests. Where the additional testing will be contracted and paid for by the Principal Representative the Contractor shall give the Principal Representative not less than one month advance written Notice of the date the first such test will be required.

ARTICLE 15. SUBCONTRACTS
The Contractor shall, within twenty one (21) days after the date of the Notice of Award, submit to the Architect/Engineer, the Principal Representative and State Buildings Programs a preliminary list of Subcontractors. It shall be as complete as possible at the time, showing all known Subcontractors planned for the work. The list shall be supplemented as other Subcontractors are determined by the Contractor and any such supplemental list shall be submitted to the Architect/Engineer, the Principal Representative and State Buildings Programs not less than ten (10) days before the Subcontractor commences work.

The Contractor's list shall include those Subcontractors, if any, which the Contractor indicated in its bid would be employed for specific portions of the Work if such indication was requested in the bid documents issued by the State. The substitution of any Subcontractor listed in the Contractor's bid shall be justified in writing not less than ten (10) days after the date of the Notice of Award, and shall be subject to the approval of the Principal Representative. For reasons such as the Subcontractor's refusal to perform as agreed,
subsequent unavailability or later discovered bid errors, or other similar reasons, but not including the availability of a lower Subcontract price, such substitution may be approved. The Contractor shall bear any additional cost incurred by such substitutions.

The Contractor shall not employ any Subcontractor that the Architect/Engineer, within seven (7) days after the date of receipt of the Contractor’s list of Subcontractors or any supplemental list, objects to in writing as being unacceptable to either the Architect/Engineer, the Principal Representative or State Buildings Programs. If a Subcontractor is deemed unacceptable, the Contractor shall propose a substitute Subcontractor and the Contract sum shall be adjusted by any demonstrated difference between the Subcontractor’s bids, except where the Subcontractor has been debarred by the State or fails to meet qualifications of the Contract Documents to perform the work proposed.

The Contractor shall be fully responsible to the Principal Representative for the acts and omissions of Subcontractors and of persons either directly or indirectly employed by them. All instructions or orders in respect to work to be done by Subcontractors shall be given to the Contractor.

ARTICLE 16. RELATIONS OF CONTRACTOR AND SUBCONTRACTOR

The Contractor agrees to bind each Subcontractor to the terms of these General Conditions and to the requirements of the Drawings and Specifications, and any Addenda thereto, and also all the other Contract Documents, so far as applicable to the work of such Subcontractor. The Contractor further agrees to bind each Subcontractor to those terms of the General Conditions which expressly require that Subcontractors also be bound, including without limitation, requirements that Subcontractors waive all rights of subrogation, provide adequate general commercial liability and property insurance, automobile insurance and workers’ compensation insurance as provided in Article 25, Insurance.

Nothing contained in the Contract Documents shall be deemed to create any contractual relationship whatsoever between any Subcontractor and the State of Colorado acting by and through its Principal Representative.

ARTICLE 17. MUTUAL RESPONSIBILITY OF CONTRACTORS

Should the Contractor cause damage to any separate contractor on the work, the Contractor agrees, upon due Notice, to settle with such contractor by agreement, if he or she will so settle. If such separate contractor sues the Principal Representative on account of any damage alleged to have been so sustained, the Principal Representative shall notify the Contractor, who shall defend such proceedings if requested to do so by Principal Representative. If any judgment against the Principal Representative arises there from, the Contractor shall pay or satisfy it and pay all costs and reasonable attorney fees incurred by the Principal Representative, in accordance with Article 52C, Indemnification, provided the Contractor was given due Notice of an opportunity to settle.

ARTICLE 18. SEPARATE CONTRACTS

The Principal Representative reserves the right to enter into other contracts in connection with the Project or the Contract. The Contractor shall afford other contractors reasonable opportunity for the introduction and storage of their materials and the execution of their work, and shall properly connect and coordinate his or her work with theirs. If any part of the Contractor’s work depends, for proper execution or results, upon the work of any other contractor, the Contractor shall inspect and promptly report to the Architect/Engineer any defects in such work that render it unsuitable for such proper execution and results. Failure of the Contractor to so inspect and report shall constitute an acceptance of the other contractor’s work as fit and proper for the reception of work, except as to defects which may develop in the other Contractor’s work after the execution of the Contractor's work.

To insure the proper execution of subsequent work, the Contractor shall measure work already in place and shall at once report to the Architect/Engineer any discrepancy between the executed work and the Drawings.
ARTICLE 19. USE OF PREMISES
The Contractor shall confine apparatus, the storage of materials and the operations of workmen to limits indicated by law, ordinances, permits and any limits lines shown on the Drawings. The Contractor shall not unreasonably encumber the premises with materials.

The Contractor shall enforce all of the Architect/Engineer’s instructions and prohibitions regarding, without limitation, such matters as signs, advertisements, fires and smoking.

ARTICLE 20. CUTTING, FITTING, OR PATCHING
The Contractor shall do all cutting, fitting or patching of work that may be required to make its several parts come together properly and fit it to receive or be received by work of other Contractors shown upon, or reasonably inferred from, the Drawings and Specifications for the complete structure, and shall provide for such finishes to patched or fitted work as the Architect/Engineer may direct. The Contractor shall not endanger any work by cutting, excavating or otherwise altering the work and shall not cut or alter the work of any other Contractor save with the consent of the Architect/Engineer.

ARTICLE 21. UTILITIES
A. TEMPORARY UTILITIES
Unless otherwise specifically stated in the Specifications or on the Drawings, the Principal Representative shall be responsible for the locations of all utilities as shown on the Drawings or indicated elsewhere in the Specifications, subject to the Contractor’s compliance with all statutory or regulatory requirements to call for utility locates. When actual conditions deviate from those shown the Contractor shall comply with the requirements of Article 37, Differing Site Conditions. The Contractor shall provide and pay for the installation of all temporary utilities required to supply all the power, light and water needed by him and other Contractors for their Work and shall install and maintain all such utilities in such manner as to protect the public and workmen and conform with any applicable laws and regulations. Upon completion of the work, he or she shall remove all such temporary utilities from the site. The Contractor shall pay for all consumption of power, light and water used by him or her and the other Contractors, without regard to whether such items are metered by temporary or permanent meters. The Superintendent shall have full authority over all trades and Subcontractors at any tier to prevent waste. The cut-off date on permanent meters shall be either the agreed date of the date of the Notice of Substantial Completion or the Notice of Approval of Occupancy/Use of the Project.

B. PROTECTION OF EXISTING UTILITIES
Where existing utilities, such as water mains, sanitary sewers, storm sewers and electrical conduits, are shown on the Drawings, the Contractor shall be responsible for the protection thereof, without regard to whether any such utilities are to be relocated or removed as a part of the Work. If any utilities are to be moved, the moving must be conducted in such manner as not to cause undue interruption or delay in the operation of the same.

C. CROSSING OF UTILITIES
When new construction crosses highways, railroads, streets, or utilities under the jurisdiction of State, city or other public agency, public utility or private entity, the Contractor shall secure proper written permission before executing such new construction. The Contractor will be required to furnish a proper release before final acceptance of the Work.

ARTICLE 22. UNSUITABLE CONDITIONS
The Contractor shall not work at any time, or permit any work to be done, under any conditions contrary to those recommended by manufacturers or industry standards which are otherwise proper, unsuited for proper execution, safety and performance. Any cost caused by ill-timed work shall be borne by the Contractor unless the timing of such work shall have been directed by the Architect/Engineer or the Principal Representative, after the award of the Contract, and the Contractor provided Notice of any additional cost.
ARTICLE 23. TEMPORARY FACILITIES

A. OFFICE FACILITIES
The Contractor shall provide and maintain without additional expense for the duration of the Project temporary office facilities, as required and as specified, for his or her own use and the use of the Architect/Engineer, representatives of the Principal Representative and State Buildings Programs.

B. TEMPORARY HEAT
The Contractor shall furnish and pay for all the labor, facilities, equipment, fuel and power necessary to supply temporary heating, ventilating and air conditioning, except to the extent otherwise specified, and shall be responsible for the installation, operation, maintenance and removal of such facilities and equipment. Unless otherwise specified, the permanent HVAC system shall not be used for temporary heat in whole or in part. If the Contractor desires to put the permanent system into use, in whole or in part, the Contractor shall set it into operation and furnish the necessary fuel and manpower to safely operate, protect and maintain that HVAC system. Any operation of all or any part of the permanent HVAC system including operation for testing purposes shall not constitute acceptance of the system, nor shall it relieve the Contractor of his or her one-year guarantee of the system from the date of the Notice of Substantial Completion of the entire Project, and if necessary due to prior operation, the Contractor shall provide manufacturers’ extended warranties from the date of the Contractor’s use prior to the date of the Notice of Substantial Completion.

C. WEATHER PROTECTION
The Contractor shall, at all times, provide protection against weather, so as to maintain all work, materials, apparatus and fixtures free from injury or damages.

D. DUST PARTITIONS
If the Work involves work in an occupied existing building, the Contractor shall erect and maintain during the progress of the work, suitable dust-proof temporary partitions, or more permanent partitions as specified, to protect such building and the occupants thereof.

E. BENCH MARKS
The Contractor shall maintain any site bench marks provided by the Principal Representative and shall establish any additional benchmarks specified by the Architect/Engineer as necessary for the Contractor to layout the work and ascertain all grades and levels as needed.

F. SIGN
The Contractor shall erect and permit one 4’ x 8’ sign only at the site to identify the Project as specified or directed by the Architect/Engineer which shall be maintained in good condition during the life of the Project.

G. SANITARY PROVISION
The Contractor shall provide and maintain suitable, clean, temporary sanitary toilet facilities for any and all workmen engaged on the Work, for the entire construction period, in strict compliance with the requirement of all applicable codes, regulations, laws and ordinances, and no other facilities, new or existing, may be used by any person on the Project. When the Project is complete the Contractor shall promptly remove them from the site, disinfect, and clean or treat the areas as required. If any new construction surfaces in the Project other than the toilet facilities provided for herein are soiled at any time, the entire areas so soiled shall be completely removed from the Project and rebuilt.

ARTICLE 24. CLEANING UP
The Contractor shall keep the building and premises free from all surplus material, waste material, dirt and rubbish caused by employees or work, and at the completion of the Work shall remove all such surplus material, waste material, dirt, and rubbish, as well as all tools, equipment and scaffolding, and shall wash and clean all window glass and plumbing fixtures, perform cleanup and cleaning required by the Specifications and leave all of the work clean unless more exact requirements are specified.
ARTICLE 25. INSURANCE

A. GENERAL LIABILITY, PROPERTY DAMAGE, AND AUTOMOBILE

The Contractor shall procure and maintain comprehensive commercial general liability and property damage insurance and comprehensive automobile liability and property damage insurance as hereinafter specified, at his or her own expense, during the life of this Contract. This insurance shall include a provision preventing cancellation without forty-five (45) days’ prior Notice by certified mail and shall state whether the coverage is “claims made” or “per occurrence”. The Contractor shall obtain “per occurrence” insurance unless otherwise agreed in writing by the Principal Representative.

A completed Certificate of Insurance shall be filed with State Buildings Programs within ten (10) days after the date of the Notice of Award, said Certificate to specifically state the inclusion of the coverages and provisions set forth herein.

This insurance must protect the Contractor from all claims for bodily injury, including death, and all claims for destruction of or damage to property, arising out of or in connection with, any operations under this Contract, whether such operations be by the Contractor or by any Subcontractor under him or anyone directly or indirectly employed by the Contractor or by a Subcontractor. All such insurance shall be written with limits and coverages as specified below and shall be written on a Comprehensive Form of Policy. In the event any of the hazards or exposures, normally listed in standard policies as “Exclusions”, are involved or required under this Contract, then such hazards or exposures shall be covered and protection afforded under the policy and such exclusions (X), (c) and (u), as excerpted from standard policies, must be removed from the policy as listed below:

“(X) Injury to or destruction of any property arising out of blasting or explosion, other than the explosion of air or steam vessels, piping under pressure, prime movers, machinery of power transmitting equipment”

“(c) The collapse of or structural injury to any building or structure due to: (1) grading of land, excavating, burrowing, filling, backfilling, tunneling, pile driving, cofferdam work or caisson work; or (2) moving, shoring, underpinning, raising or demolition of any building or structure, or removal or rebuilding of any structural support thereof;”

“(u) (1) injury to or destruction of wires, conduits, pipes, mains, sewers or other similar property, or any apparatus in connection therewith, below the surface of the ground, if such injury or destruction is caused by and occurs during the use of mechanical equipment for the purpose of grading of land, paving, excavating or drilling; or, (2) injury to or destruction of property at any time resulting there from.”

Such insurance shall be written with limits and coverages as follows, and the State of Colorado shall be named as an additional insured listed on the Acord form. The additional insured endorsement shall be requested on Insurance Services Office, Inc. (ISO) endorsement form No. CG20101185. If CG20101185 is not available, the endorsement shall be furnished by CG20101093. Additionally, CG20371001 shall be included, if possible. All aggregate amounts must be specified on the Acord form.

A. Commercial General Liability (CGL), (including bodily injury, personal injury and property damage) with the following coverages depending upon format:

1. Occurrence basis policy-combined single limit of $1,000,000
2. Annual Aggregate limit policy-not less than $2,000,000
   (Acord example) Minimum limits: $1,000,000 each occurrence
   $2,000,000 general aggregate with dedicated limits per project site
   $2,000,000 products and completed operations aggregate

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The following coverages shall be included in the CGL:

1. Premises-Operations
2. Explosion/Collapse Hazard
3. Underground Hazard
4. Products/Completed Operations Hazard
5. Broad Form Contractual
6. Independent Contractors
7. Broad Form Property Damage
8. Personal Injury

B. **Automobile Liability** and business auto liability covering liability arising out of any auto (including owned, hired and non-owned autos).

**Occurrence basis policy**-combined single limit of $1,000,000

(Acord example) Minimum limit: $1,000,000 combined single limit each accident

**Coverages:**

1. Additional insured endorsement
2. Specific waiver of subrogation
3. Contractual liability

C. **Umbrella/Excess Liability (for construction projects exceeding $10,000,000, provide the following coverage):** The vendor shall maintain umbrella/excess liability insurance on an occurrence basis in excess of the underlying insurance described in Sections A, B, and D, which is at least as broad as each and every area of the underlying policies. The amounts of insurance required in Sections A, B, and D may be satisfied by the vendor purchasing coverage for the limits specified or by any combination of underlying and umbrella limits, so long as the total amount of insurance is not less than the limits specified in each section previously mentioned.

(Acord example) Minimum limit: $5,000,000 combined single limit and aggregate limit

**Coverages:**

1. Additional insured endorsement
2. Pay on behalf of wording
3. Concurrency of effective dates with primary
4. Blanket contractual liability
5. Punitive damages coverage (where not prohibited by law)

**B. WORKERS’ COMPENSATION INSURANCE**

The Contractor shall procure and maintain Workers’ Compensation Insurance at his or her own expense during the life of this Contract, including occupational disease provisions for all employees. This insurance, if issued by a private carrier, shall contain the same forty-five (45) days’ Notice of cancellation as required in Article 25, Insurance for the Comprehensive General Liability Insurance. Evidence of such insurance shall be by the issuance of either a Certificate by the State Compensation Insurance Fund (or its successor) or, if issued by a private carrier, the completion of a Certificate of Insurance, and such Certificate shall be filed with the State Buildings Program. The Certificate shall be filed within ten (10) days after the date of the Notice of Award.

The Contractor shall also require each Subcontractor to furnish Workers’ Compensation Insurance, including occupational disease provisions for all of the latter’s employees, and to the extent not furnished, the Contractor accepts full liability and responsibility for Subcontractor’s employees.
In cases where any class of employees engaged in hazardous work under this Contract at the site of the Project is not protected under the Workers’ Compensation statute, the Contractor shall provide, and shall cause each Subcontractor to provide, adequate and suitable insurance for the protection of employees not otherwise protected.

C. **BUILDER’S RISK INSURANCE**

Unless otherwise expressly stated in the Supplementary General Conditions (e.g. where the State elects to provide for projects with a completed value of less than $1,000,000), the Contractor shall effect and maintain a policy of insurance to provide, at Contractor’s expense, All Risk Builder’s Risk Insurance Coverage which shall be in the dollar amount of the total Project for which the Work of this Contract is to be done. Such policy may have a deductible clause but not to exceed ten thousand dollars ($10,000.00).

The Contractor shall waive all rights of subrogation as regards the State of Colorado, its officials, its officers, its agents and its employees, all while acting within the scope and course of their employment. The Insurer shall not void such insurance policy by reason of the Contractor waiving said rights. The Contractor shall require all Subcontractors at any tier to similarly waive all such rights of subrogation and shall expressly include such a waiver in all subcontracts. The insurance shall remain in effect until the Date of Notice specified on the Notice of Acceptance, State Form SBP-6.27, whether or not the building or some part thereof is occupied in any manner prior to final acceptance of the Project, and shall remain fully in effect not withstanding any acceptance of the work of any Subcontractor on the Project. Such insurance shall be in an amount equal to the total insurable value of the construction. Upon request, the amount of such insurance shall be increased to include the cost of any additional work to be done on the Project, or materials or equipment to be incorporated in the Project, or materials or equipment to be incorporated in the Project, under other independent contracts let or to be let. In such event, the Contractor shall be reimbursed for this cost as his or her share of the insurance in the same ratio as the ratio of the insurance represented by such independent contracts let or to be let to the total insurance carried.

All such insurance shall insure the State of Colorado acting by and through its Principal Representative, the Contractor and his or her Subcontractors at any tier as their interests may appear. The insurance shall include a loss payable provision naming the State Controller, as loss payee.

The Principal Representative, with approval of the State Controller, shall have the power to adjust and settle any loss. Unless it is agreed otherwise, all monies received shall be applied first on rebuilding or repairing the destroyed or injured work.

The Certificate of Insurance shall specifically state the inclusion of the provisions herein above. A certificate for such insurance shall be filed with State Buildings Programs within ten (10) days after date of Notice of Award. The Insurance shall include a provision preventing cancellation without forty five (45) days’ prior Notice in writing by certified mail.

D. **ADDITIONAL MISCELLANEOUS INSURANCE PROVISIONS**

Certificates of Insurance and/or insurance policies required under this Contract shall be subject to the following stipulations and additional requirements:

1. The clause entitled “Other Insurance Provisions” contained in any policy including the State of Colorado as an additional named insured shall not apply to the State of Colorado;
2. Any and all deductibles or self-insured retentions contained in any Insurance policy shall be assumed by and at the sole risk of the Contractor;
3. If any of the said policies shall fail at any time to meet the requirements of the Contract Documents as to form or substance, or if a company issuing any such policy shall be or at any time cease to be approved by the Division of Insurance of the State of Colorado, or be or cease to be in compliance with any stricter requirements of the Contract Documents, the Contractor shall promptly obtain a new policy, submit the same to State Building Programs for approval if
requested, and submit a Certificate of Insurance as hereinbefore provided. Upon failure of the Contractor to furnish, deliver and maintain such insurance as provided herein, this Contract, in the sole discretion of the State of Colorado, may be immediately declared suspended, discontinued, or terminated. Failure of the Contractor in obtaining and/or maintaining any required insurance shall not relieve the Contractor from any liability under the Contract, nor shall the insurance requirements be construed to conflict with the obligations of the Contractor concerning indemnification;

4. All requisite insurance shall be obtained from financially responsible insurance companies, authorized to do business in the State of Colorado and acceptable to the State;

5. Receipt, review or acceptance by the State of any insurance policies or certificates of insurance required by this Contract shall not be construed as a waiver or relieve the Contractor from its obligation to meet the insurance requirements contained in these General Conditions.

ARTICLE 26. CONTRACTOR’S PERFORMANCE AND PAYMENT BONDS

The Contractor shall furnish a Performance Bond and a Labor and Material Payment Bond on State Forms SC-6.22, Performance Bond, and SC-6.221, Labor and Material Payment Bond, or such other forms as State Buildings Programs may approve for the Project, executed by a corporate Surety authorized to do business in the State of Colorado and in the full amount of the Contract sum. The expense of these bonds shall be borne by the Contractor and the bonds shall be filed with State Buildings Programs.

If, at any time, a Surety on such a bond is found to be, or ceases to be in strict compliance with any qualification requirements of the Contract Documents or the bid documents, or loses its right to do business in the State of Colorado, another Surety will be required, which the Contractor shall furnish to State Buildings Programs within ten (10) days after receipt of Notice from the State or after the Contractor otherwise becomes aware of such conditions.

ARTICLE 27. LABOR AND WAGES

In accordance with laws of Colorado, C.R.S. § 8-17-101, et. seq., as amended, Colorado labor shall be employed to perform the work to the extent of not less than eighty percent (80%) of each type or class of labor in the several classifications of skilled and common labor employed on the Project. If the Federal Davis-Bacon Act shall be applicable to the Project, as indicated in Article 54B, Modification of Article 27, the minimum wage rates to be paid on the Project will be specified in the Contract Documents.

ARTICLE 28. ROYALTIES AND PATENTS

The Contractor shall be responsible for assuring that all rights to use of products and systems have been properly arranged and shall take such action as may be necessary to avoid delay, at no additional charge to the Principal Representative, where such right is challenged during the course of the work. The Contractor shall pay all royalties and license fees required to be paid and shall defend all suits or claims for infringement of any patent rights and shall save the State of Colorado harmless from loss on account thereof, in accordance with Article 52C, Indemnification; provided, however, the Contractor shall not be responsible for such loss or defense for any copyright violations contained in the Contract Documents prepared by the Architect/Engineer or the Principal Representative of which the Contractor is unaware, or for any patent violations based on specified processes that the Contractor is unaware are patented or that the Contractor should not have had reason to believe were patented.

ARTICLE 29. ASSIGNMENT

Except as otherwise provided hereafter the Contractor shall not assign the whole or any part of this Contract without the written consent of the Principal Representative. This provision shall not be construed to prohibit assignments of the right to payment to the extent permitted by Section 4-9-406, C.R.S., as amended, provided that written Notice of assignment adequate to identify the rights assigned is received by the Principal Representative and the controller for the agency, department, or institution executing this Contract (as distinguished from the State Controller). Such assignment of the right to payment shall not be deemed valid until receipt by the Principal Representative and such controller and the Contractor assumes the risk that such written Notice of assignment is received by the Principal Representative and the controller for the agency, department, or institution involved. In case the Contractor assigns all or part of any moneys due or to become due under this Contract, the instrument of assignment shall contain a clause substantially to the
effect that it is agreed that the right of the assignee in and to any moneys due or to become due to the Contractor shall be subject to all claims of all persons, firms, and corporations for services rendered or materials supplied for the performance of the work called for in this Contract, whether said service or materials were supplied prior to or after the assignment. Nothing in this Article shall be deemed a waiver of any other defenses available to the State against the Contractor or the assignee.

ARTICLE 30. CORRECTION OF WORK BEFORE ACCEPTANCE

The Contractor shall promptly remove from the premises all work or materials condemned or declared irremediably defective as failing to conform to the Contract Documents on receipt of written Notice from the Architect/Engineer or the Principal Representative, whether incorporated in the Work or not. If such materials shall have been incorporated in the Work, or if any unsatisfactory work is discovered, the Contractor shall promptly replace and re-execute his or her work in accordance with the requirements of the Contract Documents without expense to the Principal Representative, and shall also bear the expense of making good all work of other contractors destroyed or damaged by the removal or replacement of such defective material or work.

If the Contractor does not remove such condemned or irremediably defective work or material within a reasonable time, the Principal Representative may, after giving a second seven (7) day advance Notice to the Contractor and the Surety, remove them and may store the material at the Contractor's expense. The Principal Representative may accomplish the removal and replacement with its own forces or with another Contractor. If the Contractor does not pay the expense of such removal and pay all storage charges within ten (10) days thereafter, the Principal Representative may, upon ten (10) days' written Notice, sell such material at auction or at private sale and account for the net proceeds thereof, after deducting all costs and expenses which should have been borne by the Contractor. If the Contractor shall commence and diligently pursue such removal and replacement before the expiration of the seven day period, or if the Contractor shall show good cause in conjunction with submittal of a revised CPM schedule showing when the work will be performed and why such removal of condemned work should be scheduled for a later date, the Principal Representative shall not proceed to remove or replace the condemned work.

Should any defective work or material be discovered during the process of construction, or should reasonable doubt arise as to whether certain material or work is in accordance with the Contract Documents, the value of such defective or questionable material or work shall not be included in any application for payment, or if previously included, shall be deducted by the Architect/Engineer from the next application submitted by the Contractor.

If the Contractor does not perform repair, correction and replacement of defective work, in lieu of proceeding by issuance of a Notice of intent to remove condemned work as outlined above, the Principal Representative may, not less than seven (7) days after giving the original written Notice of the need to repair, correct, or replace defective work, deduct all costs and expenses of replacement or correction as instructed by the Architect/Engineer from the Contractor's next application for payment in addition to the value of the defective work or material. The Principal Representative may also make an equitable deduction from the Contract sum by unilateral Change Order, in accordance with Article 33, Payments Withheld and Article 35, Changes In The Work.

If the Contractor disagrees with the Notice to remove work or materials condemned or declared irremediably defective, the Contractor may request facilitated negotiation of the issue and the Principal Representative's right to proceed with removal and to deduct costs and expenses of repair shall be suspended and tolled until such time as the parties meet and negotiate the issue.

During construction, whenever the Architect/Engineer has advised the Contractor in writing, in the Specifications, by reference to Article 6, Architect/Engineer Decisions And Judgments, of these General Conditions or elsewhere in the Contract Documents of a need to observe materials in place prior to their being permanently covered up, it shall be the Contractor's responsibility to notify the Architect/Engineer at least forty-eight (48) hours in advance of such covering operation. If the Contractor fails to provide such notification, Contractor shall, at his or her expense, uncover such portions of the work as required by the Architect/Engineer for observation, and reinstall such covering after observation. When a covering operation...
is continued from day to day, notification of the commencement of a single continuing covering operation shall suffice for the activity specified so long as it proceeds regularly and without interruption from day to day, in which event the Contractor shall coordinate with the Architect/Engineer regarding the continuing covering operation.

ARTICLE 31. APPLICATIONS FOR PAYMENTS

A. CONTRACTOR’S SUBMITTALS

On or before the first day of each month and no more than five days prior thereto, the Contractor may submit applications for payment for the work performed during such month covering the portion of the Work completed as of the date indicated, and payments on account of this Contract shall be due within thirty (30) days after the last day of the period for which payment is requested. The Contractor shall submit the application for payment to the Architect/Engineer on State forms SBP-7.2, Certificate for Contractor’s Payment, or such other format as the State Buildings Programs shall approve, in an itemized format in accordance with the schedule of values or a cost loaded CPM when required, supported to the extent reasonably required by the Architect/Engineer or the Principal Representative by receipts or other vouchers, showing payments for materials and labor, prior payments and payments to be made to Subcontractors and such other evidence of the Contractor’s right to payments as the Architect/Engineer or Principal Representative may direct.

If payments are made on account of materials not incorporated in the Work but delivered and suitably stored at the site, or at some other location agreed upon in writing, such payments shall be conditioned upon submission by the Contractor of bills of sale or such other procedure as will establish the Principal Representative’s title to such material or otherwise adequately protect the Principal Representative’s interests, and shall provide proof of insurance whenever requested by the Principal Representative or the Architect/Engineer, and shall be subject to the right to inspect the materials at the request of either the Architect/Engineer or the Principal Representative.

All applications for payment, except the final application, and the payments there under, shall be subject to correction in the next application rendered following the discovery of any error.

B. ARCHITECT/ENGINEER CERTIFICATION

In accordance with the Architect/Engineer’s agreement with the Principal Representative, the Architect/Engineer after appropriate observation of the progress of the work shall certify to the Principal Representative the amount that the Contractor is entitled to, and forward the application to the Principal Representative. If the Architect/Engineer certifies an amount different from the amount requested or otherwise alters the Contractor’s application for payment, a copy shall be forwarded to the Contractor.

If the Architect/Engineer is unable to certify all or portions of the amount requested due to the absence or lack of required supporting evidence, the Architect/Engineer shall advise the Contractor of the deficiency. If the deficiency is not corrected at the end of ten (10) days, the Architect/Engineer may either certify the remaining amounts properly supported to which the Contractor is entitled, or return the application for payment to the Contractor for revision with a written explanation as to why it could not be certified.

C. RETAINAGE WITHHELD

Unless otherwise provided in the Supplementary General Conditions, an amount equivalent to ten percent (10%) of the amount shown to be due the Contractor on each application for payment shall be withheld until fifty percent (50%) of the work required by the Contract has been performed. Thereafter, the remaining Certificates for Contractor’s Payment (SBP-7.2) shall be paid without retaining additional funds, if in the opinion of the Architect/Engineer and the Principal Representative, satisfactory progress is being made in the Work. The withheld percentage of the contract price of any such work, improvement, or construction shall be administered according to § 24-91-101, et seq., C.R.S., as amended, and except as provided in § 24-91-103, C.R.S., as amended, and Article 31D, shall be
D. RELEASE OF RETAINAGE

The Contractor may, for satisfactory and substantial reasons shown to the Principal Representative’s satisfaction, make a written request to the Principal Representative and the Architect/Engineer for release of part or all of the withheld percentage applicable to the work of a Subcontractor which has completed the subcontracted work in a manner finally acceptable to the Architect/Engineer, the Contractor, and the Principal Representative. Any such request shall be supported by a written approval from the Surety furnishing the Contractor’s bonds and any surety that has provided a bond for the Subcontractor. The release of any such withheld percentage shall be further supported by such other evidence as the Architect/Engineer or the Principal Representative may require, including but not limited to, evidence of prior payments made to the Subcontractor, copies of the Subcontractor’s contract with the Contractor, any applicable warranties, as-built information, maintenance manuals and other customary close-out documentation. Neither the Principal Representative nor the Architect Engineer shall be obligated to review such documentation nor shall they be deemed to assume any obligations to third parties by any review undertaken.

The Contractor’s obligation under these General Conditions to guarantee work for one year from the date of the Notice of Substantial Completion or the date of any Notice of Partial Substantial Completion of the applicable portion or phase of the Project, shall be unaffected by such partial release; unless a Notice of Partial Substantial Completion is issued for the work subject to the release of retainage.

Any rights of the Principal Representative which might be terminated by or from the date of any final acceptance of the Work, whether at common law or by the terms of this Contract, shall not be affected by such partial release of retainage prior to any final acceptance of the entire Project.

The Contractor remains fully responsible for the Subcontractor’s work and assumes any risk that might arise by virtue of the partial release to the Subcontractor of the withheld percentage, including the risk that the Subcontractor may not have fully paid for all materials, labor and equipment furnished to the Project.

If the Principal Representative considers the Contractor’s request for such release satisfactory and supported by substantial reasons, the Architect/Engineer shall make a “final inspection” of the applicable portion of the Project to determine whether the Subcontractor’s work has been completed in accordance with the Contract Documents. A final punch list shall be made for the Subcontractor’s work and the procedures of Article 41, Completion, Final Inspection, Acceptance and Settlement, shall be followed for that portion of the work, except that advertisement of the intent to make final payment to the Subcontractor shall be required only if the Principal Representative has reason to believe that a supplier or Subcontractor to the Subcontractor for which the request is made, may not have been fully paid for all labor and materials furnished to the Project.

ARTICLE 32. CERTIFICATES FOR PAYMENTS

State Form SBP-7.2, Certificate For Contractor’s Payment, and its continuation detail sheets, when submitted, shall constitute the Certificate of Contractor’s Application for Payment, and shall be a representation by the Contractor to the Principal Representative that the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and materials for which payment is requested have been incorporated into the Project except as noted in the application. If requested by the Principal Representative the Certificate of Contractor’s Application for Payment shall be sworn under oath and notarized.

ARTICLE 33. PAYMENTS WITHHELD

The Architect/Engineer, the Principal Representative or State Buildings Programs may withhold, or on account of subsequently discovered evidence nullify, the whole or any part of any application on account of, but not limited to any of the following:
1. Defective work not remedied;
2. Claims filed or reasonable evidence indicating probable filing of claims;
3. Failure of the Contractor to make payments to Subcontractors for material or labor;
4. A reasonable doubt that the Contract can be completed for the balance of the contract price then unpaid;
5. Damage or injury to another contractor or any other person, persons or property except to the extent of coverage by a policy of insurance;
6. Failure to obtain necessary permits or licenses or to comply with applicable laws, ordinances, codes, rules or regulations or the directions of the Architect/Engineer;
7. Failure to submit a monthly construction schedule;
8. Failure of the Contractor to keep work progressing in accordance with the time schedule;
9. Failure to keep a superintendent on the work;
10. Failure to maintain as built drawings of the work in progress;
11. Unauthorized deviations by the Contractor from the Contract Documents; or
12. On account of liquidated damages.

In addition, the Architect/Engineer, Principal Representative or State Buildings Programs may withhold or nullify the whole or any part of any application for any reason noted elsewhere in these General Conditions of the Contract. Nullification shall mean reduction of amounts shown as previously paid on the application. The amount withheld or nullified may be in such amount as the Architect/Engineer or the Principal Representative estimates to be required to allow the State to accomplish the Work, cure the failure and cover any damages or injuries, including an allowance for attorney’s fees and costs where appropriate. When the grounds for such withholding or nullifying are removed, payment shall be made for the amounts thus withheld or nullified on such grounds.

ARTICLE 34. DEDUCTIONS FOR UNCORRECTED WORK
If the Architect/Engineer and the Principal Representative deem it inexpedient to correct work injured or not performed in accordance with the Contract Documents, the Principal Representative may, after consultation with the Architect/Engineer and ten (10) days’ Notice to the Contractor of intent to do so, make reasonable reductions from the amounts otherwise due the Contractor on the next application for payment. Notice shall specify the amount or terms of any contemplated reduction. The Contractor may during this period elect to correct or perform the work. If the Contractor does not elect to correct or perform the work, an equitable deduction from the Contract sum shall be made by Change Order, in accordance with Article 35, Changes In The Work, unilaterally if necessary. If either party elects facilitation of this issue after Notice is given, the ten-day notice period shall be extended and tolled until facilitation has occurred.

ARTICLE 35. CHANGES IN THE WORK
The Principal Representative, or such other Procurement Officer as the Principal Representative may designate, without invalidating the Agreement, and with the approval of State Buildings Programs and the State Controller, may order extra work or make changes with or without the consent of the Contractor as hereafter provided, by altering, adding to or deducting from the Work, the Contract sum being adjusted accordingly. All such changes in the Work shall be within the general scope of and be executed under the conditions of the Contract, except that any claim for extension of time made necessary due to the change or any claim of other delay or other impacts caused by or resulting from the change in the Work shall be presented by the Contractor and adjusted by Change Order to the extent known at the time such change is ordered and before proceeding with the extra or changed work. Any claims for extension of time or of delay or other impacts, and any costs associated with extension of time, delay or other impacts, which are not presented before proceeding with the change in the Work, and which are not adjusted by Change Order to the extent known, shall be waived.

The Architect/Engineer shall have authority to make minor changes in the Work, not involving extra cost, and not inconsistent with the intent of the Contract Documents, but otherwise, except in an emergency endangering life or property, no extra work or change in the Contract Documents shall be made unless by 1) a written Change Order, approved by the Principal Representative, State Buildings Programs, and the State Controller prior to proceeding with the changed work; or 2) by an Emergency Field Change Order approved
by the Principal Representative and State Buildings Programs as hereafter provided in Article 35C, Emergency Field Ordered Changed Work; or 3) by an allocation in writing of any allowance already provided in the encumbered contract amount, the Contract sum being later adjusted to decrease the Contract sum by any unallocated or unexpended amounts remaining in such allowance. No change to the Contract sum shall be valid unless so ordered.

A. THE VALUE OF CHANGED WORK

1. The value of any extra work or changes in the Work shall be determined by agreement in one or more of the following ways:
   a. By estimate and acceptance of a lump-sum amount;
   b. By unit prices specified in the Agreement, or subsequently agreed upon, that are extended by specific quantities;
   c. By actual cost plus a fixed fee in a lump sum amount for profit, overhead and all indirect and off-site home office costs, the latter amount agreed upon in writing prior to starting the extra or changed work.

2. Where the Contractor and the Principal Representative cannot agree on the value of extra work, the Principal Representative may order the Contractor to perform the changes in the Work and a Change Order may be unilaterally issued based on an estimate of the change in the Work prepared by the Architect/Engineer. The value of the change in the Work shall be the Principal Representative's determination of the amount of equitable adjustment attributable to the extra work or change. The Principal Representative's determination shall be subject to appeal by the Contractor pursuant to the claims process in Article 36, Claims. The Principal Representative is the Procurement Officer for purposes of all of the remedies provisions of the Contract.

3. Except as otherwise provided in Article 35B, Detailed Breakdown, below, the Cost Principles of the Colorado Procurement Rules in effect on the date of this Contract, pursuant to § 24-107-101, C.R.S., as amended, shall govern all Contract changes.

B. DETAILED BREAKDOWN

In all cases where the value of the extra or changed work is not known based on unit prices in the Contractor’s bid or the Agreement, a detailed change proposal shall be submitted by the Contractor on a Change Order Proposal (SC-6.312), or in such other format as the State Buildings Program approves, with which the Principal Representative may require an itemized list of materials, equipment and labor, indicating quantities, time and cost for completion of the changed work.

Such detailed change proposals shall be stated in lump sum amounts and shall be supported by a separate breakdown, which shall include estimates of all or part of the following when requested by the Architect/Engineer or the Principal Representative:

1. Materials, indicating quantities and unit prices including taxes and delivery costs if any (separated where appropriate into general, mechanical and electrical and/or other Subcontractors’ work; and the Principal Representative may require in its discretion any significant subcontract costs to be similarly and separately broken down).
2. Labor costs, indicating hourly rates and time and labor burden to include Social Security and other payroll taxes such as unemployment, benefits and other customary burdens.
3. Costs of project management time and superintendence time of personnel stationed at the site, and other field supervision time, but only where a time extension, other than a weather delay, is approved as part of the Change Order, and only where such project management time and superintendence time is directly attributable to and required by the change; provided however that additional cost of on-site superintendence shall be allowable whenever in the opinion of the Architect/Engineer the impact of multiple change requests to be concurrently performed will result in inadequate levels of supervision to assure a proper result unless additional superintendence is provided.
4. Construction equipment (including small tools). Expenses for equipment and fuel shall be based on customary commercially reasonable rental rates and schedules. Equipment and hand tool costs shall not include the cost of items customarily owned by workers.

5. Workers’ compensation costs, if not included in labor burden.

6. The cost of commercial general liability and property damage insurance premiums but only to the extent charged the Contractor as a result of the changed work.

7. Overhead and profit, as hereafter specified.

8. Builder’s risk insurance premium costs.

9. Bond premium costs.

10. Testing costs not otherwise excluded by these General Conditions.

11. Subcontract costs.

Unless modified in the Supplementary General Conditions, overhead and profit shall not exceed the percentages set forth in the table below.

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<thead>
<tr>
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<th>OVERHEAD</th>
<th>PROFIT</th>
<th>COMMISSION</th>
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<tr>
<td>To the Contractor or to Subcontractors for the portion of work performed with their own forces:</td>
<td>10%</td>
<td>5%</td>
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<tr>
<td>To the Contractor or to Subcontractors for work performed by others at a tier immediately below either of them:</td>
<td>5%</td>
<td>5%</td>
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</tbody>
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Overhead shall include: a) insurance premium for policies not purchased for the Project and itemized above, b) home office costs for office management, administrative and supervisory personnel and assistants, c) estimating and change order preparation costs, d) incidental job burdens, e) legal costs, f) data processing costs, g) interest costs on capital, h) general office expenses except those attributable to increased rental expenses for temporary facilities, and all other indirect costs, but shall not include the Social Security tax and other direct labor burdens. The term “work” as used in the proceeding table shall include labor, materials and equipment and the “Commission” shall include all costs and profit for carrying the subcontracted work at the tiers below except direct costs as listed in items 1 through 11 above if any.

On proposals for work involving both additions and credits in the amount of the Contract sum, the overhead and profit will be allowed on the net increase only. On proposals resulting in a net deduct to the amount of the Contract sum, profit on the deducted amount shall be returned to the Principal Representative at fifty percent (50%) of the rate specified. The inadequacy of the profit specified shall not be a basis for refusal to submit a proposal.

Except in the case of Change Orders or Emergency Field Change Orders agreed to on the basis of a lump sum amount or unit prices as described in paragraphs 35A1 and 35A2 above, The Value of Changed Work, the Contractor shall keep and present a correct and fully auditable account of the several items of cost, together with vouchers, receipts, time cards and other proof of costs incurred, summarized on a Change Order form (SC-6.31) using such format for supporting documentation as the Principal Representative and State Buildings Programs approve. This requirement applies equally to work done by Subcontractors. Only auditable costs shall be reimbursable on Change Orders where the value is determined on the basis of actual cost plus a fixed fee pursuant to paragraph 35A3 above, or where unilaterally determined by the Principal Representative on the basis of an equitable adjustment in accordance with the Procurement Rules, as described above in Article 35A, The Value Of Changed Work.

Except for proposals for work involving both additions and credits, changed work shall be adjusted and considered separately for work either added or omitted. The amount of adjustment for work omitted shall be estimated at the time it is directed to be omitted, and when reasonable to do so, the agreed
adjustment shall be reflected on the schedule of values used for the next Contractor’s application for payment.

The Principal Representative reserves the right to contract with any person or firm other than the Contractor for any or all extra work; however, unless specifically required in the Contract Documents, the Contractor shall have no responsibility without additional compensation to supervise or coordinate the work of persons or firms separately contracted by the Principal Representative.

C. EMERGENCY FIELD CHANGE ORDERED WORK

The Principal Representative, without invalidating the Agreement, and with the approval of State Buildings Programs and without the approval of the State Controller, may order extra work or make changes in the case of an emergency that is a threat to life or property or where the likelihood of delays in processing a normal Change Order will result in substantial delays and or significant cost increases for the Project. Emergency Field Orders are not to be used solely to expedite normal Change Order processing absent a clear showing of a high potential for significant and substantial cost or delay. Such changes in the Work may be directed through issuance of an Emergency Field Change Order signed by the Contractor, the Principal Representative (or by a designee specifically appointed to do so in writing), and approved by the Director of State Buildings Program or his or her delegate. The change shall be directed using a State Change Order form (SC-6.31), modified with the words “Emergency Field Change Order” at the top.

If the amount of the adjustment of the Contract price and time for completion can be determined at the time of issuance of the Emergency Field Change Order, those adjustments shall be reflected on the face of the Emergency Field Change Order. Otherwise, the Emergency Field Change Order shall reflect a not to exceed (NTE) amount for any schedule adjustment (increasing or decreasing the time for completion) and an NTE amount for any adjustment to Contract sum, which NTE amount shall represent the maximum amount of adjustment to which the Contractor will be entitled, including direct and indirect costs of changed work, as well as any direct or indirect costs attributable to delays, inefficiencies or other impacts arising out of the change. Emergency Field Change Orders directed in accordance with this provision need not bear the approval signatures of the State Controller.

On Emergency Field Change Orders where the price and schedule have not been finally determined, the Contractor shall submit final costs for adjustment as soon as practicable. No later than seven (7) days after issuance, except as otherwise permitted, and every seven days thereafter, the Contractor shall report all costs to the Principal Representative and the Architect/Engineer. Weekly cost reports and the final adjustment of the Emergency Field Change Orders amount and the adjustment to the Project time for completion shall be prepared in accordance with the procedures described in Article 35A, The Value of Changed Work, and B, Detailed Breakdown, above. Unless otherwise provided in writing signed by the Director of State Buildings Programs to the Principal Representative and the Contractor, describing the extent and limits of any greater authority, individual Emergency Field Change Orders shall not be issued for more than $25,000, nor shall the cumulative value of Emergency Field Change Orders exceed an amount of $100,000.

D. APPROPRIATION LIMITATIONS - § 24-91-103.6, C.R.S., as amended

The amount of money appropriated, as shown on the Agreement (SC 6.21), is equal to or in excess of the Contract amount. No Change Order, Emergency Field Change Order, or other type of order or directive shall be issued by the Principal Representative, or any agent acting on his or her behalf, which directs additional compensable work to be performed, which work causes the aggregate amount payable under the Contract to exceed the amount appropriated for the original Contract, as shown on the Agreement (SC-6.13), unless one of the following occurs: (1) the Contractor is provided written assurance from the Principal Representative that sufficient additional lawful appropriations exist to cover the cost of the additional work; or (2) the work is covered by a contractor remedy provision under the Contract, such as a claim for extra cost. By way of example only, no assurance is required for any order, directive or instruction by the Architect/Engineer or the Principal Representative to
perform work which is determined to be within the performance required by the Contract Documents; the Contractor's remedy shall be as described elsewhere in these General Conditions.

Written assurance shall be in the form of an Amendment to the Contract reciting the source and amount of such appropriation available for the Project. No remedy granting provision of this Contract shall obligate the Principal Representative to seek appropriations to cover costs in excess of the amounts recited as available to pay for the work to be performed.

ARTICLE 36. CLAIMS

It is the intent of these General Conditions to provide procedures for speedy and timely resolution of disagreements and disputes at the lowest level possible. In the spirit of on the job resolution of job site issues, the parties are encouraged to use the partnering processes of Article 2D, Partnering, Communications and Cooperation, before turning to the more formal claims processes described in this Article 36, Claims. The use of non-binding dispute resolution, whether through the formal processes described in Article 39, Non-Binding Dispute Resolution – Facilitated Negotiations, or through less formal alternative processes developed as part of a partnering plan, are also encouraged. Where such process cannot resolve the issues in dispute, the claims process that follows is intended to cause the issues to be presented, decided and where necessary, documented in close proximity to the events from which the issues arise. To that end, and in summary of the remedy granting process that follows commencing with the next paragraph of this Article 36, Claims, the Contractor shall 1) first, seek a decision by the Architect/Engineer, and 2) shall second, informally present the claim to Principal Representative as described hereafter, and 3) failing resolution in the field, give Notice of intent to exercise statutory rights of review of a formal contract controversy, and 4) seek resolution outside the Contract as provided by the Procurement Code.

If the Contractor claims that any instructions, by detailed drawings, or otherwise, or any other act or omission of the Architect/Engineer or Principal Representative affecting the scope of the Contractor's work, involve extra cost, extra time or changes in the scope of the Work under this Contract, the Contractor shall have the right to assert a claim for such costs or time, provided that before either proceeding to execute such work (except in an emergency endangering life or property), or filing a Notice of claim, the Contractor shall have obtained or requested a written decision of the Architect/Engineer following the procedures as provided in Article 6A and B, Architect/Engineer Decisions and Judgments, respectively; provided, however, that in the case of a directed change in the Work pursuant to Article 36A4, no written judgment or decision of the Architect/Engineer is required. If the Contractor is delayed by the lack of a response to a request for a decision by the Architect/Engineer, the Contractor shall give Notice in accordance with Article 38, Delays And Extensions Of Time.

Unless it is the Architect/Engineer's judgment and determination that the work is not included in the performance required by the Contract Documents, the Contractor shall proceed with the work as originally directed. Where the Contractor's claim involves a dispute concerning the value of work unilaterally directed pursuant to Article 35A4 the Contractor shall also proceed with the work as originally directed while his or her claim is being considered.

The Contractor shall give the Principal Representative and the Architect/Engineer Notice of any claim promptly after the receipt of the Architect/Engineer's decision, but in no case later than three (3) business days after receipt of the Architect/Engineer's decision (or no later than ten (10) days from the date of the Contractor's request for a decision when the Architect/Engineer fails to decide as provided in Article 6). The Notice of claim shall state the grounds for the claim and the amount of the claim to the extent known in accordance with the procedures of Article 35, Changes In The Work. The period in which Notice must be given may be extended by the Principal Representative if requested in writing by the Contractor with good cause shown, but any such extension to be effective shall be in writing.

The Principal Representative shall respond in writing, with a copy to the Architect/Engineer, within a reasonable time, and except where a request for facilitation of negotiation has been made as hereafter provided, in no case later than seven (7) business days (or at such other time as the Contractor and Principal Representative agree) after receipt of the Contractor’s Notice of claim regarding such instructions.
or alleged act or omission. If no response to the Contractor's claim is received within seven (7) business
days of Contractor's Notice (or at such other time as the Contractor and Principal Representative agree) and
the instructions have not been retracted, it shall be deemed that the Principal Representative has denied the
claim.

The Principal Representative may grant or deny the claim in whole or in part, and a Change Order shall be
issued if the claim is granted. To the extent any portion of claim is granted where costs are not clearly
shown, the Principal Representative may direct that the value of that portion of the work be determined by
any method allowed in Article 35A, The Value of Changed Work. Except in the case of a deemed denial,
the Principal Representative shall provide a written explanation regarding any portion of the Contractor's
claim that is denied.

If the Contractor disagrees with the Principal Representative’s judgment and determination on the claim and
seeks an equitable adjustment of the Contract sum or time for performance, he or she shall give Notice of
intent to exercise his or her statutory right to seek a decision on the contract controversy within ten (10) days
of receipt of the Principal Representative’s decision denying the claim. A “contract controversy,” as such
term is used in the Colorado Procurement Code, § 24-109-106, C.R.S., shall not arise until the initial claim
process described above in this Article 36 has been properly exhausted by the Contractor. The Contractor’s
failure to proceed with work directed by the Architect/Engineer or to exhaust the claim process provided
above in this Article 36, shall constitute an abandonment of the claim by the Contractor and a waiver of the
right to contest the decision in any forum.

At the time of filing the Notice of intent to exercise his or her statutory right to seek a decision on the contract
controversy, the Contractor may request that the Principal Representative defer a decision on the contract
controversy until a later date or until the end of the Project. If the Principal Representative agrees, he or she
shall so advise the Contractor in writing. If no such request is made, or if the Principal Representative does
not agree to such a request, the Principal Representative shall render a written decision within twenty (20)
business days and advise the Contractor of the reasons for any denial. Unless the claim has been decided by
the Principal Representative (as opposed to delegates of the Principal Representative), the person who
renders the decision on this statutory contract controversy shall not be the same person who decided the
claim. To the extent any portion of the contract controversy is granted where costs are not clearly shown,
the Principal Representative may direct that the value of that portion of the work be determined by any
method allowed in Article 35A, The Value of Changed Work. In the event of a denial the Principal
Representative shall give Notice to the Contractor of his or her right to administrative and judicial reviews as
provided in the Colorado Procurement Code, § 24-109-201 et seq, C.R.S., as amended. If no decision
regarding the contract controversy is issued within twenty (20) business days of the Contractor's giving
Notice (or such other date as the Contractor and Principal Representative have agreed), and the instructions
have not been retracted or the alleged act or omission have not been corrected, it shall be deemed that the
Principal Representative has ruled by denial on the contract controversy. Except in the case of a deemed
denial, the Principal Representative shall provide an explanation regarding any portion of the contract
controversy that involves denial of the Contractor’s claim.

Either the Contractor or the Principal Representative may request facilitation of negotiations concerning the
claim or the contract controversy, and if requested, the parties shall consult and negotiate before the
Principal Representative decides the issue. Any request for facilitation by the Contractor shall be made at
the time of the giving of Notice of the claim or Notice of the contract controversy. Facilitation shall extend
the time for the Principal Representative to respond by commencing the applicable period at the completion
of the facilitated negotiation, which shall be the last day of the parties’ meeting, unless otherwise agreed in
writing.

Disagreement with the decision of the Architect Engineer, or the decision of the Principal Representative to
deny any claim or denying the contract controversy, shall not be grounds for the Contractor to refuse to
perform the work directed or to suspend or terminate performance. During the period that any claim or
contract controversy decision is pending under this Article 36, Claims, the Contractor shall proceed diligently
with the work directed.
In all cases where the Contractor proceeds with the work and seeks equitable adjustment by filing a claim and or statutory appeal, the Contractor shall keep a correct account of the extra cost, in accordance with Article 35B, Detailed Breakdown supported by receipts. The Principal Representative shall be entitled to reject any claim or contract controversy whenever the foregoing procedures are not followed and such accounts and receipts are not presented.

The payments to the Contractor in respect of such extra costs shall be limited to reimbursement for the current additional expenditure by the Contractor made necessary by the change in the work, plus a reasonable amount for overhead and profit, determined in accordance with Article 35B, Detailed Breakdown, determined solely with reference to the additional work, if any, required by the change.

ARTICLE 37. DIFFERING SITE CONDITIONS

A. NOTICE IN WRITING

The Contractor shall promptly, and where possible before conditions are disturbed, give the Architect/Engineer and the Principal Representative Notice in writing of:

1. subsurface or latent physical conditions at the site differing materially from those indicated in or reasonably assumed from the information provided in the Contract Documents; and,
2. unknown physical conditions at the site, of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents.

The Architect/Engineer shall promptly investigate the conditions, and if it is found that such conditions do materially so differ and cause an increase or decrease in the Contractor’s costs of performance of any part of the work required by the Contract Documents, whether or not such work is changed as a result of such conditions, an equitable adjustment shall be made and the Contract sum shall be modified in accordance with Article 35, Changes In The Work.

If the time required for completion of the work affected by such materially differing conditions will extend the work on the critical path as indicated on the CPM schedule, the time for completion shall also be equitably adjusted.

B. LIMITATIONS

No claim of the Contractor under this clause shall be allowed unless the Contractor has given the Notice required in Article 37A, Notice In Writing, above. The time prescribed for presentation and adjustment in Articles 36, Claims and 38, Delays And Extensions Of Time, shall be reasonably extended by the State to the extent required by the nature of the differing conditions; provided, however, that even when so extended no claim by the Contractor for an equitable adjustment hereunder shall be allowed if not quantified and presented prior to the date the Contractor requests a final inspection pursuant to Article 41A, Notice Of Completion.

ARTICLE 38. DELAYS AND EXTENSIONS OF TIME

If the Contractor is delayed at any time in the progress of the Work by any act or neglect of the State of Colorado or the Architect/Engineer, or of any employee or agent of either, or by any separately employed Contractor or by strikes, lockouts, fire, unusual delay in transportation, unavoidable casualties or any other causes beyond the Contractor’s control, including weather delays as defined below, the time of Completion of the Work shall be extended for a period equal to such portion of the period of delays directly affecting the completion of the Work as the Contractor shall be able to show he or she could not have avoided by the exercise of due diligence.

The Contractor shall provide Notice in writing to the Architect/Engineer, the Principal Representative and State Buildings Programs within three (3) business days from the beginning of such delay and shall file a written claim for an extension of time within seven (7) business days after the period of such delay has ceased, otherwise, any claim for an extension of time is waived.
Provided that the Contractor has submitted reasonable schedules for approval when required by Article 12, Requests for Information and Schedules, if no schedule is agreed to fixing the dates on which the responses to requests for information or detail drawings will be needed, or Shop Drawings, Product Data or Samples are to be reviewed as required or allowed by Article 12B, Schedules, no extension of time will be allowed for the Architect/Engineer's failure to furnish such detail drawings as needed, or for the failure to initially review Shop Drawings, Product Data or Samples, except in respect of that part of any delay in furnishing detail drawings or instructions extending beyond a reasonable period after written demand for such detailed drawings or instructions is received by the Architect/Engineer. In any event, any claim for an extension of time for such cause will be recognized only to the extent of delay directly caused by failure to furnish detail drawings or instructions or to review Shop Drawings, Product Data or Samples pursuant to schedule, after such demand.

All claims for extension of time due to a delay claimed to arise or result from ordered changes in the scope of the Work, or due to instructions claimed to increase the scope of the Work, shall be presented to the Architect/Engineer, the Principal Representative and State Buildings Programs as part of a claim for extra cost, if any, in accordance with Article 36, Claims, and in accordance with the Change Order procedures required by Article 35, Changes In The Work.

Except as otherwise provided in this paragraph, no extension of time shall be granted when the Contractor has failed to utilize a CPM schedule or otherwise identify the Project's critical path as specified in Article 12, Requests for Information and Schedules, or has elected not to do so when allowed by the Supplementary General Conditions or the Specifications to use less sophisticated scheduling tools, or has failed to maintain such a schedule. Delay directly affecting the completion of the Work shall result in an extension of time only to the extent that completion of the Work was affected by impacts to the critical path shown on Contractor's CPM schedule. Where the circumstances make it indisputable in the opinion of the Architect/Engineer that the delay affected the completion of the Work so directly that the additional notice of the schedule impact by reference to a CPM schedule was unnecessary, a reasonable extension of time may be granted.

Extension of the time for completion of the Work will be granted for delays due to weather conditions only when the Contractor demonstrates that such conditions were more severe and extended than those reflected by the ten-year average for the month, as evidenced by the Climatological Data, U. S. Department of Commerce, for the Project area.

Extensions of the time for completion of the Work due to weather will be granted on the basis of one and three tenths (1.3) calendar days for every day that the Contractor would have worked but was unable to work, with each separate extension figured to the nearest whole calendar day.

For weather delays and delays caused by events, acts or omissions not within the control of the Principal Representative or any person acting on the Principal Representative's behalf, the Contractor shall be entitled to an extension of time only and shall not be entitled to recovery of additional cost due to or resulting from such delays. This Article does not, however, preclude the recovery of damages for delay by either party under other provisions in the Contract Documents.

ARTICLE 39. NON-BINDING DISPUTE RESOLUTION – FACILITATED NEGOTIATIONS

The Contractor and Principal Representative agree to designate one or more mutually acceptable persons willing and able to facilitate negotiations and communications for the resolution of conflicts, disagreements or disputes between them at the specific request of either party with regard to any Project decision of either of them or any decision of the Architect/Engineer. The designation of such person(s) shall not carry any obligation to use their services except that each party agrees that if the other party requests the intervention of such person(s) with respect to any such conflict, dispute or disagreement, the non-requesting party shall participate in good faith attempts to negotiate a resolution of the issue in dispute. If the parties cannot agree on a mutually acceptable person to serve in this capacity one shall be so appointed; provided, however, that either party may request the director of State Buildings Programs to appoint such a person, who, if appointed, shall be accepted for this purpose by both the Contractor and the Principal Representative.
The cost, if any, of the facilitative services of the person(s) so designated shall be shared if the parties so agree in any partnering plan; or in the absence of agreement the cost shall be borne by the party requesting the facilitation of negotiation.

Any dispute, claim, question or disagreement arising from or relating to the Contract or an alleged breach of the Contract may be subject to a request by either party for facilitated negotiation subject to the limitations hereafter listed, and the parties shall participate by consultation and negotiation with each other, as guided by the facilitator and with recognition of their mutual interests, in an attempt to reach an equitable solution satisfactory to both parties.

The obligation to participate in facilitated negotiations shall be as described above and elsewhere in these General Conditions, as by way of example in Article 36, Claims, or Article 34, Deductions for Uncorrected Work, and to the extent not more particularly described or limited elsewhere, each party’s obligations shall be as follows:

1. a party shall not initiate communication with the facilitator regarding the issues in dispute; except that any request for facilitation shall be made in writing with copies sent, faxed or delivered to the other party;
2. a party shall prepare a brief written description of its position if so requested by the facilitator (who may elect to first discuss the parties’ positions with each party separately in the interest of time and expense);
3. a party shall respond to any reasonable request for copies of documents requested by the facilitator, but such requests, if voluminous, may consist of an offer to allow the facilitator access to the parties' documents;
4. a party shall review any meeting agenda proposed by a facilitator and endeavor to be informed on the subjects to be discussed;
5. a party shall meet with the other party and the facilitator at a mutually acceptable place and time, or, if none can be agreed to, at the time and place designated by the facilitator for a period not to exceed four hours unless the parties agree to a longer period;
6. a party shall endeavor to assure that any facilitation meeting shall be attended by any other persons in their employ that the facilitator requests be present, if reasonably available, including the Architect/Engineer;
7. each party shall participate in such facilitated face-to-face negotiations of the issues in dispute through persons fully authorized to resolve the issue in dispute;
8. each party shall be obligated to participate in negotiations requested by the other party and to perform the specific obligations described in paragraphs (1) through (10) this Article 39, Facilitated Negotiation, no more than three times during the course of the Project;
9. neither party shall be under any obligation to resolve any issue by facilitated negotiation, but each agrees to participate in good faith and the Principal Representative shall direct the Architect/Engineer to appropriately document any resolution or agreement reached and to execute any Amendment or Change Order to the Contract necessary to implement their agreement; and,
10. any discussions and documents prepared exclusively for use in the negotiations shall be deemed to be matters pertaining to settlement negotiations and shall not be subsequently available in further proceedings except to the extent of any documented agreement.

In accordance with State Fiscal Rules and Article 52F, Choice of Law; No Arbitration, nothing in this Article 39 shall be deemed to call for arbitration or otherwise obligate the State to participate in any form of binding alternative dispute resolution.

A partnering plan developed as described in Article 2D, Communications and Cooperation, may modify or expand the requirements of this Article but may not reduce the obligation to participate in facilitated negotiations when applicable. In the case of small projects estimated to be valued under $500,000, the requirements of this Article may be deleted from this Contract, by modification in Article 54, Optional Provisions And Elections. When so modified, the references to the parties’ right to elect facilitated negotiation elsewhere in these General Conditions shall be deleted.
ARTICLE 40. RIGHT OF OCCUPANCY

The Principal Representative shall have the right to take possession of and to use any completed or partially completed portions of the Work, even if the time for completing the entire Work or portions of the Work has not expired and even if the Work has not been finally accepted, and the Contractor shall fully cooperate with the Principal Representative to allow such possession and use. Such possession and use shall not constitute an acceptance of such portions of the Work.

Prior to any occupancy of the Project, an inspection shall be made by the Architect/Engineer, State Buildings Programs and the Contractor. Such inspection shall be made for the purpose of ensuring that the building is secure, protected by operation safety systems as designed, operable exits, power, lighting and HVAC systems, and otherwise ready for the occupancy intended and the Notice of Substantial Completion has been issued for the occupancy intended. The inspection shall also document existing finish conditions to allow assessment of any damage by occupants. The Contractor shall assist the Principal Representative in completing and executing State Form SBP-01, Approval of Occupancy/Use, prior to the Principal Representative’s possession and use. Any and all areas so occupied will be subject to a final inspection when the Contractor complies with Article 41, Completion, Final Inspection, Acceptance and Settlement.

ARTICLE 41. COMPLETION, FINAL INSPECTION, ACCEPTANCE, AND SETTLEMENT

A. NOTICE OF COMPLETION

When the Work, or a discrete physical portion of the Work (as hereafter described) which the Principal Representative has agreed to accept separately, is substantially complete and ready for final inspection, the Contractor shall file a written Notice with the Architect/Engineer that the Work, or such discrete physical portion, in the opinion of the Contractor, is substantially complete under the terms of the Contract. The Contractor shall prepare and submit with such Notice a comprehensive list of items to be completed or corrected prior to final payment, which shall be subject to review and additions as the Architect/Engineer or the Principal Representative shall determine after inspection. If the Architect/Engineer or the Principal Representative believe that any of the items on the list of items submitted, or any other item of work to be corrected or completed, or the cumulative number of items of work to be corrected or completed, will prevent a determination that the Work is substantially complete, those items shall be completed by the Contractor and the Notice shall then be resubmitted.

B. FINAL INSPECTION

Within ten (10) days after the Contractor files written Notice that the Work is substantially complete, the Architect/Engineer, the Principal Representative, and the Contractor shall make a “final inspection” of the Project to determine whether the Work is substantially complete and has been completed in accordance with the Contract Documents. State Buildings Programs shall be notified of the inspection not less than three (3) business days in advance of the inspection. The Contractor shall provide the Principal Representative and the Architect/Engineer an updated punch list in sufficient detail to fully outline the following:

1. work to be completed, if any; and
2. work not in compliance with the Drawings or Specifications, if any.

A final punch list shall be made by the Architect/Engineer in sufficient detail to fully outline to the Contractor:

1. work to be completed, if any;
2. work not in compliance with the Drawings or Specifications, if any; and
3. unsatisfactory work for any reason, if any.

The required number of copies of the final punch list will be countersigned by the authorized representative of the Principal Representative and will then be transmitted by the Architect/Engineer to the Contractor, the Principal Representative, and State Buildings Programs. The Architect/Engineer’s final punch list shall control over the Contractor’s preliminary punch list.
C. NOTICE OF SUBSTANTIAL COMPLETION

Notice of Substantial Completion shall establish the date of substantial completion of the Project. The Contractor acknowledges and agrees that because the departments, agencies and institutions of the State of Colorado are generally involved with the business of the public at large, greater care must be taken in establishing the date of substantial completion than might otherwise be the case to ensure that a project or building or discrete physical portion of the Work is fully usable and safe for public use, and that such care necessarily raises the standard by which the concept of substantial completion is applied for a public building.

The Notice of Substantial Completion shall not be issued until the following have been fully established:

1. All required building code inspections have been called for and the appropriate code officials have affixed their signatures to the Building Inspection Record indicating successful completion of all required code inspections;
2. All required corrections noted on the Building Inspection Record shall have been completed unless the Architect/Engineer, the Principal Representative and State Buildings Programs, in their complete and absolute discretion, all concur that the condition requiring the remaining correction is not in any way life threatening, does not otherwise endanger persons or property, and does not result in any undue inconvenience or hardship to the Principal Representative or the public;
3. The building, structure or Project can be fully and comfortably used by the Principal Representative and the public without undue interference by the Contractor’s employees and workers during the completion of the final punch list taking into consideration the nature of the public uses intended and taking into consideration any stage or level of completion of HVAC system commissioning or other system testing required by the Specifications to be completed prior to issuance of the Notice of Substantial Completion;
4. The Project has been fully cleaned as required by these General Conditions, and as required by any stricter requirements of the Specifications, and the overall state of completion is appropriate for presentation to the public; and
5. The Contractor has provided a schedule for the completion of each and every item identified on the punch list which specifies the Subcontractor or trade responsible for the work, and the dates the completion or correction of the item will be commenced and finished; such schedule will show completion of all remaining final punch list items within the period indicated in the Contract for final punch list completion prior to Final Acceptance, with the exception of only those items which are beyond the control of the Contractor despite due diligence. The schedule shall provide for a reasonable punch list inspection process. Unless liquidated damages have been specified in Article 54D(2), the cost to the Principal Representative, if any, for re-inspections due to failure to adhere to the Contractor’s proposed punch-list completion schedule shall be the responsibility of the Contractor and may be deducted by the Principal Representative from final amounts due to the Contractor.

Substantial completion of the entire Project shall not be conclusively established by a decision by the Principal Representative to take possession and use of a portion, or all of the Project, where portions of the Project cannot meet all the criteria noted above. Notice of Substantial Completion for the entire Project shall, however, only be withheld for substantial reasons when the Principal Representative has taken possession and uses all of the Project in accordance with the terms of Article 40, Right Of Occupancy. Failure to furnish the required completion schedule shall constitute a substantial reason for withholding the issuance of any Notice of Substantial Completion.

The Contractor shall have the right to request a final inspection of any discrete physical portion of the Project when in the opinion of the Architect/Engineer a final punch list can be reasonably prepared, without confusion as to which portions of the Project are referred to in any subsequent Notice of Partial Final Settlement which might be issued after such portion is finally accepted. Discrete physical portions of the Project may be, but shall not necessarily be limited to, such portions of the Project as
separate buildings where a Project consists of multiple buildings. Similarly, an addition to an existing building where the Project also calls for renovation or remodeling of the existing building may constitute a discrete physical portion of the Project. In such circumstances, when in the opinion of the Principal Representative, the Architect/Engineer and State Buildings Programs, the requirements for issuance of a Notice of Substantial Completion can be satisfied with respect to the discrete portion of the Project, a partial Notice of Substantial Completion may be issued for such discrete physical portion of the Project. The ability to beneficially occupy a discrete physical portion of the Project shall also be considered.

D. NOTICE OF ACCEPTANCE
The Notice of Acceptance shall establish the completion date of the Project. It shall not be authorized until the Contractor shall have performed all of the work to allow completion and approval of the Pre-Acceptance Checklist (SBP-05). It shall not be authorized until the Pre-Acceptance punch list (SBP-06) shall have been prepared and approved containing no more than ten items of work remaining to be completed or repaired.

Where partial Notices of Substantial Completion have been issued, partial Notices of Final Acceptance may be similarly issued when appropriate for that portion of the Work. Partial Notice of Final Acceptance may also be issued to exclude the work described in Change Orders executed during late stages of the Project where a later completion date for the Change Ordered work is expressly provided for in the Contract as amended by the Change Order, provided the work can be adequately described to allow partial advertisement of any Notice of Partial Final Settlement to be issued without confusion as to the work included for which final payment will be made.

E. SETTLEMENT
Final payment and settlement shall be made on the date fixed and published for such payment except as hereafter provided. The Principal Representative shall not authorize final payment until all items on the Pre-Acceptance punch list (SBP-06) have been completed, the Notice of Acceptance issued, and the Notice of Contractors Settlement published. If the work shall be substantially completed, but Final Acceptance and completion thereof shall be prevented through delay in correction of minor defects, or unavailability of materials or other causes beyond the control of the Contractor, the Principal Representative in his or her discretion may release to the Contractor such amounts as may be in excess of three times the cost of completing the unfinished work or the cost of correcting the defective work, as estimated by the Architect/Engineer and approved by State Buildings Programs. Before the Principal Representative may issue the Notice of Contractor’s Settlement and advertise the Project for final payment, the Contractor shall have corrected all items on the punch list except those items for which delayed performance is expressly permitted, subject to withholding for the cost thereof, and shall have:

1. Delivered to the Architect/Engineer:
   a. All guarantees and warranties;
   b. All statements to support local sales tax refunds, if any;
   c. Three (3) complete bound sets of required operating maintenance instructions; and,
   d. One (1) set of as-built Contract Documents showing all job changes.

2. Demonstrated to the operating personnel of the Principal Representative the proper operation and maintenance of all equipment.

Upon completion of the foregoing the Project shall be advertised in accordance with the Notice of Contractor’s Settlement by two publications of Notice, the last publication appearing at least ten (10) days prior to the time of final settlement. Publication and final settlement should not be postponed or delayed solely by virtue of unresolved claims against the Project or the Contractor from Subcontractors, suppliers or materialmen based on good faith disputes; the resolution of the question of payment in such cases being directed by statute.
Except as hereafter provided, on the date of final settlement thus advertised, provided the Contractor has submitted a written Notice to the Architect/Engineer that no claims have been filed, and further provided the Principal Representative shall have received no claims, final payments and settlement shall be made in full. If any unpaid claim for labor, materials, rental machinery, tools, supplies or equipment is filed before payment in full of all sums due the Contractor, the Principal Representative and the State Controller shall withhold from the Contractor on the date established for final settlement, sufficient funds to insure the payment of such claim, until the same shall have been paid or withdrawn, such payment or withdrawal to be evidenced by filing a receipt in full or an order for withdrawal signed by the claimant or his or her duly authorized agent or assignee. The amount so withheld may be in the amount of 125% of the claims or such other amount as the Principal Representative reasonably deems necessary to cover expected legal expenses. Such withheld amounts shall be in addition to any amount withheld based on the cost to compete unfinished work or the cost to repair defective work. However, as provided by statute, such funds shall not be withheld longer than ninety (90) days following the date fixed for final settlement with the Contractor, as set forth in the published Notice of Contractor's Settlement, unless an action at law shall be commenced within that time to enforce such unpaid claim and a Notice of such action at law shall have been filed with the Principal Representative and the State Controller. At the expiration of the ninety (90) day period, the Principal Representative shall authorize the State Controller to release to the Contractor all other money not the subject of such action at law or withheld based on the cost to compete unfinished work or the cost to repair defective work.

Notices of Partial Final Settlement may be similarly advertised, provided all conditions precedent have been satisfied as though that portion of the work affected stood alone, a Notice of Partial Acceptance has been issued, and the consent of surety to the partial final settlement has been obtained in writing. Thereafter, partial final payments may be made to the Contractor subject to the same conditions regarding unpaid claims.

ARTICLE 42. GENERAL WARRANTY AND CORRECTION OF WORK AFTER ACCEPTANCE
The Contractor warrants that the materials used and the equipment furnished shall be new and of good quality unless specified to the contrary. The Contractor further warrants that the Work shall in all respects be free from material defects not permitted by the Specifications and shall be in accordance with the requirements of the Contract Documents. Neither the final certificate for payment nor any provision in the Contract Documents shall relieve the Contractor of responsibility for defects or faulty materials or workmanship. The Contractor shall be responsible to the Principal Representative for such warranties for the longest period permitted by any applicable statute of limitations.

In addition to these general warranties, and without limitation of these general warranties, for a period of one year after the date of any Notice of Substantial Completion, or any Notice of Partial Substantial Completion if applicable, the Contractor shall remedy defects, and faulty workmanship or materials, and work not in accordance with the Contract Documents which was not accepted at the time of the Notice of Final Acceptance, all in accordance with the provisions of Article 45, One-Year Guarantee And Special Guarantees And Warranties.

ARTICLE 43. LIENS
Colorado statutes do not provide for any right of lien against public buildings. In lieu thereof, § 38-26-107, C.R.S., provides adequate relief for any claimant having furnished labor, materials, rental machinery, tools, equipment, or services toward construction of the particular public work in that final payment may not be made to a Contractor until all such creditors have been put on Notice by publication in the public press of such pending payment and given opportunity for a period of up to ninety (90) days to stop payment to the Contractor in the amount of such claims.

ARTICLE 44. ONE-YEAR GUARANTEE AND SPECIAL GUARANTEES AND WARRANTIES
A. ONE-YEAR GUARANTEE OF THE WORK
The Contractor shall guarantee to remedy defects and repair or replace the Work for a period of one year from the date of the Notice of Substantial Completion or from the dates of any partial Notices of
Substantial Completion issued for discrete physical portions of the Work. The Contractor shall remedy any defects due to faulty materials or workmanship and shall pay for, repair and replace any damage to other work resulting there from, which shall appear within a period of one year from the date of such Notice(s) of Substantial Completion. The Contractor shall also remedy any deviation from the requirements of the Contract Documents which shall later be discovered within a period of one year from the date of the Notice of Substantial Completion; provided, however, that the Contractor shall not be required to remedy deviations from the requirements of the Contract Documents where such deviations were obvious, apparent and accepted by the Architect/Engineer or the Principal Representative at the time of the Notice of Final Acceptance. The Principal Representative shall give Notice of observed defects or other work requiring correction with reasonable promptness. Such Notice shall be in writing to the Architect/Engineer and the Contractor.

The one year guarantee of the Contractor’s work may run separately for discrete physical portions of the Work for which partial Notices of Substantial Completion have been issued, however, it shall run from the last Notice of Substantial Completion with respect to all or any systems common to the work to which more than one Notice of Substantial Completion may apply.

This one-year guarantee shall not be construed to limit the Contractor’s general warranty described in Article 42, General Warranty and Correction of Work After Acceptance, that all materials and equipment are new and of good quality, unless specified to the contrary, and that the Work shall in all respects be free from material defects not permitted by the Specifications and in accordance with the requirements of the Contract Documents.

B. SPECIAL GUARANTEES AND WARRANTIES

In case of work performed for which product, manufacturers or other special warranties are required by the Specifications, the Contractor shall secure the required warranties and deliver copies thereof to the Principal Representative through the Architect/Engineer upon completion of the work.

These product, manufacturers, or other special warranties, as such, do not in any way lessen the Contractor’s responsibilities under the Contract. Whenever guarantees or warranties are required by the Specifications for a longer period than one year, such longer period shall govern.

ARTICLE 45. GUARANTEE INSPECTIONS AFTER COMPLETION

The Architect/Engineer, the Principal Representative and the Contractor together shall make at least two (2) complete inspections of the work after the Work has been determined to be substantially complete and accepted. One such inspection, the “Six-Month Guarantee Inspection,” shall be made approximately six (6) months after date of the Notice of Substantial Completion, unless in the case of smaller projects valued under $500,000 this inspection is declined in Article 54A, Modification of Article 45, in which case the inspection to occur at six months shall not be required. Another such inspection, the “Eleven-Month Guaranty Inspection” shall be made approximately eleven (11) months after the date of the Notice of Substantial Completion. The Principal Representative shall schedule and so notify all parties concerned, including State Buildings Programs, of these inspections. If more than one Notice of Substantial Completion has been issued at the reasonable discretion of the Principal Representative separate eleven month inspections may be required where the one year guarantees do not run reasonably concurrent.

Written punch lists and reports of these inspections shall be made by the Architect/Engineer and forwarded to the Contractor, the Principal Representative, State Buildings Programs, and all other participants within ten (10) days after the completion of the inspections. The punch list shall itemize all guarantee items, prior punch list items still to be corrected or completed and any other requirements of the Contract Documents to be completed which were not waived by final acceptance because they were not obvious or could not reasonably have been previously observed. The Contractor shall immediately initiate such remedial work as may be necessary to correct any deficiencies or defective work shown by this report, and shall promptly complete all such remedial work in a manner satisfactory to the Architect/Engineer, the Principal Representative and State Buildings Programs.
If the Contractor fails to promptly correct all deficiencies and defects shown by this report, the Principal Representative may do so, after giving the Contractor ten (10) days written Notice of intention to do so.

The State of Colorado, acting by and through the Principal Representative, shall be entitled to collect from the Contractor all costs and expenses incurred by it in correcting such deficiencies and defects, as well as all damages resulting from such deficiencies and defects.

**ARTICLE 46. TIME OF COMPLETION AND LIQUIDATED DAMAGES**

It is hereby understood and mutually agreed, by and between the parties hereto, that the date of beginning, rate of progress, and the time for completion of the Work to be done hereunder are ESSENTIAL CONDITIONS of this Agreement, and it is understood and agreed that the Work embraced in this Contract shall be commenced at the time specified in the Notice to Proceed (SC-6.26).

It is further agreed that time is of the essence of each and every portion of this Contract, and of any portion of the Work described on the Drawings or Specifications, wherein a definite and certain length of time is fixed for the performance of any act whatsoever. The parties further agree that where under the Contract additional time is allowed for the completion of the Work or any identified portion of the Work, the new time limit or limits fixed by such extension of the time for completion shall be of the essence of this Agreement.

The Contractor acknowledges that subject to any limitations in the Advertisement for Bids, issued for the Project, the Contractor's bid is consistent with and considers the number of days to substantially complete the Project and the number of days to finally complete the Project to which the parties may have stipulated in the Agreement, which stipulation was based on the Contractor's bid. The Contractor agrees that work shall be prosecuted regularly, diligently and uninterruptedly at such rate of progress as will ensure the Project will be substantially complete, and fully and finally complete, as recognized by the issuance of all required Notices of Substantial Completion and Notices of Final Acceptance, within any times stipulated and specified in the Agreement, as the same may be amended by Change Order or other written modification, and that the Principal Representative will be damaged if the times of completion are delayed.

It is expressly understood and agreed, by and between the parties hereto, that the times for the Substantial Completion of the Work or for the final acceptance of the Work as may be stipulated in the Agreement, and as applied here and in Article 54D, Modifications of Article 46, are reasonable times for these stages of completion of the Work, taking into such consideration all factors, including the average climatic range and usual industrial conditions prevailing in the locality of the building operations.

If the Contractor shall neglect, fail or refuse to complete the Work within the times specified in the Agreement, such failure shall constitute a breach of the terms of the Contract and the State of Colorado, acting by and through the Principal Representative, shall be entitled to liquidated damages for such neglect, failure or refusal, as specified in Article 54D, Modification of Article 46.

The Contractor and the Contractor's Surety shall be jointly liable for and shall pay the Principal Representative, or the Principal Representative may withhold, the sums hereinafter stipulated as liquidated damages for each calendar day of delay until the entire Project is 1) substantially completed, and the Notice (or all Notices) of Substantial Completion are issued, 2) finally complete and accepted and the Notice (or all Notices) of Acceptance are issued, or 3) both. Delay in substantial completion shall be measured from the Date of the Notice to Proceed and delay in final completion and acceptance shall be measured from the Date of the Notice of Substantial Completion.

In the first instance, specified in Article 54D(1), Modification of Article 46, liquidated damages, if any, shall be the amount specified therein, for each calendar day of delay beginning after the stipulated number of days for Substantial Completion from the date of the Notice to Proceed, until the date of the Notice of Substantial Completion. Unless otherwise specified in any Supplementary General Conditions, in the event of any partial Notice of Substantial Completion, liquidated damages shall accrue until all required Notices of Substantial Completion are issued.
In the second instance, specified in Article 54D(2), Modification of Article 46, liquidated damages, if any, shall be the amount specified in Article 54D, Modification of Article 46, for each calendar day in excess of the number of calendar days specified in the Contractor's bid for the Project and stipulated in the Agreement to finally complete the Project (as defined by the issuance of the Notice of Acceptance) after the final Notice of Substantial Completion has been issued.

In the third instance, when so specified in both Articles 54D(1) and (2), both types of liquidated damages shall be separately assessed where those delays have occurred.

The parties expressly agree that said amounts are a reasonable estimate of the presumed actual damages that would result from any of the breaches listed, and that any liquidated damages that are assessed have been agreed to in light of the difficulty of ascertaining the actual damages that would be caused by any of these breaches at the time this Contract was formed; the liquidated damages in the first instance representing an estimate of damages due to the inability to use the Project; the liquidated damages in the second instance representing an estimate of damages due to the additional administrative, technical, supervisory and professional expenses related to and arising from the extended closeout period including delivery of any or all guarantees and warranties, the submittals of sales and use tax payment forms, the calling for the final inspection and the completion of the final punch list.

The parties also agree and understand that the liquidated damages to be assessed in each instance are separate and distinct, although potentially cumulative, damages for the separate and distinct breaches of delayed substantial completion or final acceptance. Such liquidated damages shall not be avoided by virtue of the fact of concurrent delay caused by the Principal Representative, or anyone acting on behalf of the Principal Representative, but in such event the period of delay for which liquidated damages are assessed shall be equitably adjusted in accordance with Article 38, Delays And Extensions Of Time.

ARTICLE 47. DAMAGES

If either party to this Contract shall suffer damage under this Contract in any manner because of any wrongful act or neglect of the other party or of anyone employed by either of them, then the party suffering damage shall be reimbursed by the other party for such damage. Except to the extent of damages liquidated for the Contractor's failure to achieve timely completion as set forth in Article 46, Time of Completion and Liquidated Damages, the Principal Representative shall be responsible for, and at his or her option may insure against, loss of use of any existing property not included in the Work, due to fire or otherwise, however caused. Notwithstanding the foregoing, or any other provision of this Contract, to the contrary, no term or condition of this contract shall be construed or interpreted as a waiver, express or implied, of any of the immunities, rights, benefits, protection, or other provisions of the Colorado Governmental Immunity Act, Section 24-10-101, et seq., CRS, as now or hereafter amended. The parties understand and agree that liability for claims for injuries to persons arising out of negligence of the State of Colorado, its departments, institutions, agencies, boards, officials and employees is controlled and limited by the provisions of Section 24-10-101, et seq., CRS, as now or hereafter amended and the risk management statutes, Section 24-30-1501, et seq., CRS, as now or hereafter amended. Notice of intent to file a claim under this clause shall be made in writing to the party liable within a reasonable time of the first observance of such damage and not later than the time of final payment, except that in the case of claims by the Principal Representative involving warranties against faulty work or materials Notice shall be required only to the extent stipulated elsewhere in these General Conditions. Claims made to the Principal Representative involving extra cost or extra time arising by virtue of instructions to the Contractor to which Article 36, Claims, applies shall be made in accordance with Article 36. Other claims arising under the Contract involving extra cost or extra time which are made to the Principal Representative under this clause shall also be made in accordance with the procedures of Article 36, whether or not arising by virtue of instructions to the Contractor; provided however that it shall not be necessary to first obtain or request a written judgment of the Architect/Engineer.

Provided written Notice of intent to file a claim is provided as required in the preceding paragraph, nothing in this Article shall limit or restrict the rights of either party to bring an action at law or to seek other relief to which either party may be entitled, including consequential damages, if any, and shall not be construed to
limit the time during which any action might be brought. Nothing in these General Conditions shall be
deprecated to limit the period of time during which any action may be brought as a matter of contract, tort,
wafronty or otherwise, it being the intent of the parties to allow any and all actions at law or in equity for such
periods as the law permits. All such rights shall, however be subject to the obligation to assert claims and to
appeal denials pursuant to Article 36, Claims, where applicable.

ARTICLE 48. STATE’S RIGHT TO DO THE WORK; TEMPORARY SUSPENSION OF WORK; DELAY
DAMAGES

A. STATE’S RIGHT TO DO THE WORK
If after receipt of Notice to do so, the Contractor should neglect to prosecute the Work properly or fail
to perform any provision of the Contract, the Principal Representative, after a second seven (7) days’
advance written Notice to the Contractor and the Surety may, without prejudice to any other remedy
the Principal Representative may have, take control of all or a portion of the Work, as the Principal
Representative deems necessary and make good such deficiencies deducting the cost thereof from
the payment then or thereafter due the Contractor, as provided in Article 30, Correction Of Work
Before Acceptance and Article 33, Payments Withheld, provided, however, that the Architect/Engineer
shall approve the amount charged to the Contractor by approval of the Change Order.

B. TEMPORARY SUSPENSION OF WORK
The State, acting for itself or by and through the Architect/Engineer, shall have the authority to
suspend the Work, either wholly or in part, for such period or periods as may be deemed necessary
due to:

1. Unsuitable weather;
2. Faulty workmanship;
3. Improper superintendence;
4. Contractor’s failure to carry out orders or to perform any provision of the Contract Documents;
5. Loss of, or restrictions to, appropriations;
6. Conditions, which may be considered unfavorable for the prosecution of the Work.

If it should become necessary to stop work for an indefinite period, the Contractor shall store materials
in such manner that they will not become an obstruction or become damaged in any way; and he or
she shall take every precaution to prevent damage to or deterioration of the Work, provide suitable
drainage and erect temporary structures where necessary.

Notice of suspension of work shall be provided to the Contractor in writing stating the reasons
therefore. The Contractor shall again proceed with the work when so notified in writing.

The Contractor understands and agrees that the State of Colorado cannot predict with certainty future
revenues and could ultimately lack the revenue to fund the appropriations applicable to this Contract.
The Contractor further acknowledges and agrees that in such event that State may, upon Notice to the
Contractor, suspend the work in anticipation of a termination of the Contract for the convenience of the
State, pursuant to Article 50, Termination For Convenience of State. If the Contract is not so
terminated the Contract sum and the Contract time shall be equitably adjusted at the time the Principal
Representative directs the work to be recommenced and gives Notice that the revenue to fund the
appropriation is available.

C. DELAY DAMAGES
The Principal Representative and the State of Colorado shall be liable to the Contractor for the
payment of any claim for extra costs, extra compensation or damages occasioned by hindrances or
delays encountered in the work only when and to the limited extent that such hindrance or delay is
caused by an act or omission within the control of the Principal Representative, the Architect/Engineer
or other persons or entities acting on behalf of the Principal Representative. Further, the Principal
Representative and the State of Colorado shall be liable to the Contractor for the payment of such a
claim only if the Contractor has provided required Notice of the delay or impact, or has presented its
claim for an extension of time or claim of other delay or other impact due to changes ordered in the work before proceeding with the changed work. Except as otherwise provided, claims for extension of time shall be noticed and filed in accordance with Article 38, Delays and Extensions of Time, within three (3) business days of the beginning of the delay with any claim filed within seven (7) days after the delay has ceased, or such claim is waived. Claims for extension of time or for other delay or other impact resulting from changes ordered in the Work shall be presented and adjusted as provided in Article 35, Changes in the Work.

ARTICLE 49. STATE’S RIGHTS TO TERMINATE CONTRACT

A. GENERAL

If the Contractor should be adjudged bankrupt, or if he or she should make a general assignment for the benefit of his or her creditors, or if a receiver should be appointed to take over his affairs, or if he or she should fail to prosecute his or her work with due diligence and carry the work forward in accordance with the construction schedule and the time limits set forth in the Contract Documents, or if he or she should fail to subsequently perform one or more of the provisions of the Contract Documents to be performed by him, the Principal Representative may serve written Notice on the Contractor and the Surety on performance and payment bonds, stating his or her intention to exercise one of the remedies hereinafter set forth and the grounds upon which the Principal Representative bases his or her right to exercise such remedy.

In such event, unless the matter complained of is satisfactorily cleared within ten (10) days after delivery of such Notice, the Principal Representative may, without prejudice to any other right or remedy, exercise one of such remedies at once, having first obtained the concurrence of the Architect/Engineer in writing that sufficient cause exists to justify such action.

B. CONDITIONS AND PROCEDURES

1. The Principal Representative may terminate the services of the Contractor, which termination shall take effect immediately upon service of Notice thereof on the Contractor and his or her Surety, whereupon the Surety shall have the right to take over and perform the Contract. If the Surety does not provide Notice to the Principal Representative of its intent to commence performance of the Contract within ten (10) days after delivery of the Notice of termination, the Principal Representative may take over the Work, take possession of and use all materials, tools, equipment and appliances on the premises and prosecute the Work to completion by such means as he or she shall deem best. In the event of such termination of his or her service, the Contractor shall not be entitled to any further payment under the Contract until the Work is completed and accepted. If the Principal Representative takes over the Work and if the unpaid balance of the contract price exceeds the cost of completing the Work, including compensation for any damages or expenses incurred by the Principal Representative through the default of the Contractor, such excess shall be paid to the Contractor. If, however, the cost, expenses and damages as certified by the Architect/Engineer exceed such unpaid balance of the contract price, the Contractor and his or her Surety shall pay the difference to the Principal Representative.

2. The Principal Representative may require the Surety on the Contractor’s bond to take control of the Work and see to it that all the deficiencies of the Contractor are made good, with due diligence within ten (10) days of delivery of Notice to the Surety to do so. As between the Principal Representative and the Surety, the cost of making good such deficiencies shall all be borne by the Surety. If the Surety takes over the Work, either by election upon termination of the services of the Contractor pursuant to Section B(1) of this Article 49, State’s Right To Terminate Contract, or upon instructions from the Principal Representative to do so, the provisions of the Contract Documents shall govern the work to be done by the Surety, the Surety being substituted for the Contractor as to such provisions, including provisions as to payment for the Work, the times of completion and provisions of this Article as to the right of the Principal Representative to do the Work or to take control of all or a portion of the Work.

3. The Principal Representative may take control of all or a portion of the Work and make good the deficiencies of the Contractor, or the Surety if the Surety has been substituted for the
Contractor, with or without terminating the Contract, employing such additional help as the Principal Representative deems advisable in accordance with the provisions of Article 48A, State's Right To Do The Work; Temporary Suspension Of Work; Delay Damages. In such event, the Principal Representative shall be entitled to collect from the Contractor and his or her Surety, or to deduct from any payment then or thereafter due the Contractor, the costs incurred in having such deficiencies made good and any damages or expenses incurred through the default of Contractor, provided the Architect/Engineer approves the amount thus charged to the Contractor.

If the Contract is not terminated, a Change Order to the Contract shall be executed, unilaterally if necessary, in accordance with the procedures of Article 35, Changes In The Work.

C. ADDITIONAL CONDITIONS

If any termination by the Principal Representative for cause is later determined to have been improper, the termination shall be automatically converted to and deemed to be a termination by the Principal Representative for convenience and the Contractor shall be limited in recovery to the compensation provided for in Article 50, Termination For Convenience Of State. Termination by the Contractor shall not be subject to such conversion.

ARTICLE 50. TERMINATION FOR CONVENIENCE OF STATE

A. NOTICE OF TERMINATION

The performance of Work under this Contract may be terminated, in whole or from time to time in part, by the State whenever for any reason the Principal Representative shall determine that such termination is in the best interest of State. Termination of work hereunder shall be effected by delivery to the Contractor of a Notice of such termination specifying the extent to which the performance of work under the Contract is terminated and the date upon which such termination becomes effective.

B. PROCEDURES

After receipt of the Notice of termination, the Contractor shall, to the extent appropriate to the termination, cancel outstanding commitments hereunder covering the procurement of materials, supplies, equipment and miscellaneous items. In addition, the Contractor shall exercise all reasonable diligence to accomplish the cancellation or diversion of all applicable outstanding commitments covering personal performance of any work terminated by the Notice. With respect to such canceled commitments, the Contractor agrees to:

1. settle all outstanding liabilities and all claims arising out of such cancellation of commitments, with approval or ratification of the Principal Representative, to the extent he or she may require, which approval or ratification shall be final for all purposes of this clause; and,

2. assign to the State, in the manner, at the time, and to the extent directed by the Principal Representative, all of the right, title, and interest of the Contractor under the orders and subcontracts so terminated, in which case the State shall have the right, in its discretion, to settle or pay any or all claims arising out of the termination of such orders and subcontracts.

The Contractor shall submit his or her termination claim to the Principal Representative promptly after receipt of a Notice of termination, but in no event later than three (3) months from the effective date thereof, unless one or more extensions in writing are granted by the Principal Representative upon written request of the Contractor within such three month period or authorized extension thereof. Upon failure of the Contractor to submit his or her termination claim within the time allowed, the Principal Representative may determine, on the basis of information available to him, the amount, if any, due to the Contractor by reason of the termination and shall thereupon pay to the Contractor the amount so determined.

Costs claimed, agreed to, or determined pursuant to the preceding and following paragraph shall be in accordance with the provisions of § 24-107-101, C.R.S., as amended and associated Cost Principles of the Colorado Procurement Rules as in effect on the date of this Contract.
Subject to the preceding provisions, the Contractor and the Principal Representative may agree upon the whole or any part of the amount or amounts to be paid to the Contractor by reason of the termination under this clause, which amount or amounts may include any reasonable cancellation charges thereby incurred by the Contractor and any reasonable loss upon outstanding commitments for personal services which he or she is unable to cancel; provided, however, that in connection with any outstanding commitments for personal services which the Contractor is unable to cancel, the Contractor shall have exercised reasonable diligence to divert such commitments to other activities and operations. Any such agreement shall be embodied in an Amendment to this Contract and the Contractor shall be paid the agreed amount.

The State may from time to time, under such terms and conditions as it may prescribe, make partial payments against costs incurred by the Contractor in connection with the termination portion of this Contract, whenever, in the opinion of the Principal Representative, the aggregate of such payments is within the amount to which the Contractor will be entitled hereunder.

The Contractor agrees to transfer title and deliver to the State, in the manner, at the time, and to the extent, if any, directed by the Principal Representative, such information and items which, if the Contract had been completed, would have been required to be furnished to the State, including:

a. completed or partially completed plans, Drawings and information; and,

b. materials or equipment produced or in process or acquired in connection with the performance of the work terminated by the Notice.

Other than the above, any termination inventory resulting from the termination of the Contract may, with written approval of the Principal Representative, be sold or acquired by the Contractor under the conditions prescribed by and at a price or prices approved by the Principal Representative. The proceeds of any such disposition shall be applied in reduction of any payments to be made by the State to the Contractor under this Contract or shall otherwise be credited to the price or cost of work covered by this Contract or paid in such other manners as the Principal Representative may direct. Pending final disposition of property arising from the termination, the Contractor agrees to take such action as may be necessary, or as the Principal Representative may direct, for the protection and preservation of the property related to this Contract which is in the possession of the Contractor and in which the State has or may acquire an interest.

Any disputes as to questions of fact, which may arise hereunder, shall be subject to the Remedies provisions of the Colorado Procurement Code, §§ 24-109-101, et seq., C.R.S., as amended.

ARTICLE 51. CONTRACTOR’S RIGHT TO STOP WORK AND/OR TERMINATE CONTRACT

If the Work shall be stopped under an order of any court or other public authority for a period of three (3) months through no act or fault of the Contractor or of any one employed by him, then the Contractor may on seven (7) days’ written Notice to the Principal Representative and the Architect/Engineer stop work or terminate this Contract and recover from the Principal Representative payment for all work executed, any losses sustained on any plant or material, and a reasonable profit. If the Architect/Engineer shall fail to issue or otherwise act in writing upon any certificate for payment within ten (10) days after it is presented and received by the Architect/Engineer, as provided in Article 31, Applications For Payments, or if the Principal Representative shall fail to pay the Contractor any sum certified that is not disputed in whole or in part by the Principal Representative in writing to the Contractor and the Architect/Engineer within thirty (30) days after the Architect/Engineer’s certification, then the Contractor may on ten (10) days’ written Notice to the Principal Representative and the Architect/Engineer stop work and/or give written Notice of intention to terminate this Contract.

If the Principal Representative shall thereafter fail to pay the Contractor any amount certified by the Architect/Engineer and not disputed in writing by the Principal Representative within ten (10) days after receipt of such Notice, then the Contractor may terminate this Contract and recover from the Principal Representative payment for all work executed, any losses sustained upon any plant or materials, and a reasonable profit. The Principal Representative’s right to dispute an amount certified by the
Architect/Engineer shall not relieve the Principal Representative of the obligation to pay amounts not in dispute as certified by the Architect/Engineer.

ARTICLE 52. SPECIAL PROVISIONS

A. CONTROLLER’S APPROVAL CRS 24-30-202(1)
This Contract shall not be deemed valid until it has been approved by the Colorado State Controller or designee.

B. FUND AVAILABILITY CRS 24-30-202(5.5)
Financial obligations of the State payable after the current fiscal year are contingent upon funds for that purpose being appropriated, budgeted, and otherwise made available.

C. GOVERNMENTAL IMMUNITY
No term or condition of this contract shall be construed or interpreted as a waiver, express or implied, of any of the immunities, rights, benefits, protections, or other provisions, of the Colorado Governmental Immunity Act, CRS §24-10-101 et seq., or the Federal Tort Claims Act, 28 U.S.C. §§1346(b) and 2671 et seq., as applicable now or hereafter amended.

D. INDEPENDENT CONTRACTOR 4 CCR 801-2
Contractor shall perform its duties hereunder as an independent contractor and not as an employee. Neither Contractor nor any agent or employee of Contractor shall be deemed to be an agent or employee of the State. Contractor and its employees and agents are not entitled to unemployment insurance or workers compensation benefits through the State and the State shall not pay for or otherwise provide such coverage for Contractor or any of its agents or employees. Unemployment insurance benefits will be available to Contractor and its employees and agents only if such coverage is made available by Contractor or a third party. Contractor shall pay when due all applicable employment taxes and income taxes and local head taxes incurred pursuant to this contract. Contractor shall not have authorization, express or implied, to bind the State to any agreement, liability or understanding, except as expressly set forth herein. Contractor shall (a) provide and keep in force workers’ compensation and unemployment compensation insurance in the amounts required by law, (b) provide proof thereof when requested by the State, and (c) be solely responsible for its acts and those of its employees and agents.

E. COMPLIANCE WITH LAW
Contractor shall strictly comply with all applicable federal and State laws, rules, and regulations in effect or hereafter established, including, without limitation, laws applicable to discrimination and unfair employment practices.

F. CHOICE OF LAW
Colorado law, and rules and regulations issued pursuant thereto, shall be applied in the interpretation, execution, and enforcement of this contract. Any provision included or incorporated herein by reference which conflicts with said laws, rules, and regulations shall be null and void. Any provision incorporated herein by reference which purports to negate this or any other Special Provision in whole or in part shall not be valid or enforceable or available in any action at law, whether by way of complaint, defense, or otherwise. Any provision rendered null and void by the operation of this provision shall not invalidate the remainder of this contract, to the extent capable of execution.

G. BINDING ARBITRATION PROHIBITED
The State of Colorado does not agree to binding arbitration by any extra-judicial body or person. Any provision to the contrary in this contract or incorporated herein by reference shall be null and void.

H. SOFTWARE PIRACY PROHIBITION. Governor’s Executive Order D 002 00
State or other public funds payable under this contract shall not be used for the acquisition, operation, or maintenance of computer software in violation of federal copyright laws or applicable licensing
restrictions. Contractor hereby certifies and warrants that, during the term of this contract and any extensions, Contractor has and shall maintain in place appropriate systems and controls to prevent such improper use of public funds. If the State determines that Contractor is in violation of this provision, the State may exercise any remedy available at law or in equity under this contract, including, without limitation, immediate termination of this contract and any remedy consistent with federal copyright laws or applicable licensing restrictions.

I. **EMPLOYEE FINANCIAL INTEREST/CONFLICT OF INTEREST**

**CRS 24-18-201 & CRS 24-50-507**

The signatories aver that to their knowledge, no employee of the State has any personal or beneficial interest whatsoever in the service or property described in this contract. Contractor has no interest and shall not acquire any interest, direct or indirect, that would conflict in any manner or degree with the performance of Contractor's services and Contractor shall not employ any person having such known interests.

J. **VENDOR OFFSET CRS 24-30-202(1) & CRS 24-30-202.4**

Subject to CRS §24-30-202.4 (3.5), the State Controller may withhold payment under the State's vendor offset intercept system for debts owed to State agencies for: (a) unpaid child support debts or child support arrearages; (b) unpaid balances of tax, accrued interest, or other charges specified in CRS §39-21-101, et seq.; (c) unpaid loans due to the Student Loan Division of the Department of Higher Education; (d) amounts required to be paid to the Unemployment Compensation Fund; and (e) other unpaid debts owing to the State as a result of final agency determination or judicial action.

K. **PUBLIC CONTRACTS FOR SERVICES. CRS §8-17.5-101.** [Not Applicable to agreements relating to the offer, issuance, or sale of securities, investment advisory services or fund management services, sponsored projects, intergovernmental agreements, or information technology services or products and services] Contractor certifies, warrants, and agrees that it does not knowingly employ or contract with an illegal alien who will perform work under this contract and will confirm the employment eligibility of all employees who are newly hired for employment in the United States to perform work under this contract, through participation in the E-Verify Program or the Department program established pursuant to CRS §8-17.5-102(5)(c), Contractor shall not knowingly employ or contract with an illegal alien to perform work under this contract or enter into a contract with a subcontractor that fails to certify to Contractor that the subcontractor shall not knowingly employ or contract with an illegal alien to perform work under this contract. Contractor (a) shall not use E-Verify Program or Department program procedures to undertake pre-employment screening of job applicants while this contract is being performed, (b) shall notify the subcontractor and the contracting State agency within three days if Contractor has actual knowledge that a subcontractor is employing or contracting with an illegal alien for work under this contract, (c) shall terminate the subcontract if a subcontractor does not stop employing or contracting with the illegal alien within three days of receiving the notice, and (d) shall comply with reasonable requests made in the course of an investigation, undertaken pursuant to CRS §8-17.5-102(5), by the Colorado Department of Labor and Employment. If Contractor participates in the Department program, Contractor shall deliver to the contracting State agency, Institution of Higher Education or political subdivision a written, notarized affirmation, affirming that Contractor has examined the legal work status of such employee, and shall comply with all of the other requirements of the Department program. If Contractor fails to comply with any requirement of this provision or CRS §8-17.5-101 et seq., the contracting State agency, institution of higher education or political subdivision may terminate this contract for breach and, if so terminated, Contractor shall be liable for damages.

L. **PUBLIC CONTRACTS WITH NATURAL PERSONS. CRS §24-76.5-101.**

Contractor, if a natural person eighteen (18) years of age or older, hereby swears and affirms under penalty of perjury that he or she (a) is a citizen or otherwise lawfully present in the United States pursuant to federal law, (b) shall comply with the provisions of CRS §24-76.5-101 et seq., and (c) has produced one form of identification required by CRS §24-76.5-103 prior to the effective date of this contract.
ARTICLE 53. MISCELLANEOUS PROVISIONS

A. CONSTRUCTION OF LANGUAGE
The language used in these General Conditions shall be construed as a whole according to its plain meaning, and not strictly for or against any party. Such construction shall, however, construe language to interpret the intent of the parties giving due consideration to the order of precedence noted in Article 2C, Intent of Documents.

B. SEVERABILITY
If any covenant, term, condition, or provision contained in these General Conditions is held by a court of competent jurisdiction to be invalid, illegal, or unenforceable in any respect, such covenant, term, condition, or provision shall be severed or modified to the extent necessary to make it enforceable, and the resulting General Conditions shall remain in full force and effect, and such invalidity or other failure shall not affect the validity of any other covenant, term or provision hereof. Provided the same does not work a substantial injustice, these General Conditions shall be construed as if such invalid portion had not been inserted.

C. SECTION HEADINGS
The section or paragraph headings contained within these General Conditions are inserted for convenience only and shall not be construed to vary or add to the meaning of this Contract.

D. AUTHORITY
Each person executing the Agreement and its Exhibits in a representative capacity expressly represents and warrants that he or she has been duly authorized by one of the parties to execute the Agreement and has authority to bind said party to the terms and conditions hereof.

E. INTEGRATION OF UNDERSTANDING
This Contract is intended as the complete integration of all understandings between the parties and supercedes all prior negotiations, representations, or agreements, whether written or oral. No prior or contemporaneous addition, deletion, or other amendment hereto shall have any force or effect whatsoever, unless embodied herein in writing. No subsequent novation, renewal, addition, deletion, or other amendment hereto shall have any force or effect unless embodied in a written Change Order or Amendment to this Contract.

F. VENUE
The parties agree that venue for any action related to performance of this Contract shall be an appropriate District Court of the State of Colorado.

G. NO THIRD PARTY BENEFICIARIES
Except as herein specifically provided otherwise, this Contract shall inure to the benefit of and be binding upon the parties hereto and their respective successors and assigns. The enforcement of the terms and conditions of this Contract and all rights of action relating to such enforcement, shall be strictly reserved to the parties to the Agreement. Nothing contained in the Contract Documents shall give or allow any claim or right of action whatsoever by any other person or entity as beneficiary; all such non-parties shall be deemed incidental beneficiaries only.

H. WAIVER
The waiver of any breach of a term hereof shall not be construed as a waiver of any other term, of the same term upon subsequent breach.
I. INDEMNIFICATION
Contractor shall indemnify, save, and hold harmless the State, its employees and agents, against any and all claims, damages, liability and court awards including costs, expenses, and attorney fees and related costs, incurred as a result of any act or omission by Contractor, or its employees, agents, subcontractors, or assignees pursuant to the terms of this contract.

ARTICLE 54. OPTIONAL PROVISIONS AND ELECTIONS
The provisions of this Article 54 alter the preceding Articles or enlarge upon them as indicated:
The Principal Representative and or the State Buildings Programs shall mark boxes and initial where applicable.

A. MODIFICATION OF ARTICLE 45. GUARANTEE INSPECTIONS AFTER COMPLETION
If the box below is marked the six month guarantee inspection is not required.

☐ ______ Principal Representative initial

B. MODIFICATION OF ARTICLE 27. LABOR AND WAGES
If the box is marked the Federal Davis-Bacon Act shall be applicable to the Project. The minimum wage rates to be paid on the Project shall be furnished by the Principal Representative and included in the Contract Documents.

☐ ______ Principal Representative initial

C. MODIFICATION OF ARTICLE 39. NON-BINDING DISPUTE RESOLUTION – FACILITATED NEGOTIATIONS
If the box is marked, and initialed by the State as noted, the requirement to participate in facilitated negotiations shall be deleted from this Contract. Article 39, Non-Binding Dispute Resolution – Facilitated Negotiations, shall be deleted in its entirety and all references to the right to the same where ever they appear in the contract shall be similarly deleted.
The box may be marked only for projects with an estimated value of less than $500,000.

☐ ______ Principal Representative initial

D. MODIFICATION OF ARTICLE 46. TIME OF COMPLETION AND LIQUIDATED DAMAGES
If an amount is indicated immediately below, liquidated damages shall be applicable to this Project as, and to, the extent shown below. Where an amount is indicated below, liquidated damages shall be assessed in accordance with and pursuant to the terms of Article 46, Time of Completion And Liquidated Damages, in the amounts and as here indicated. The election of liquidated damages shall limit and control the parties right to damages only to the extent noted.

1. For the inability to use the Project, for each day after the number of calendar days specified in the Contractor’s bid for the Project and the Agreement for achievement of Substantial Completion, until the day that the Project has achieved Substantial Completion and the Notice of Substantial Completion is issued, the Contractor agrees that an amount equal to two thousand dollars ($2,000.00) shall be assessed against Contractor from amounts due and payable to the Contractor under the Contract, or the Contractor and the Contractor’s Surety shall pay to the Principal Representative such sum for any deficiency, if amounts on account thereof are deducted from remaining amounts due, but amounts remaining are insufficient to cover the entire assessment.

2. For damages related to or arising from additional administrative, technical, supervisory and professional expenses related to and arising from the extended closeout period, for each day in
excess of the number of calendar days specified in the Contractor’s bid for the Project and the Agreement to finally complete the Project as defined by the issuance of the Notice of Final Acceptance) after the issuance of the final Notice of Substantial Completion, the Contractor agrees that an amount equal to costs incurred, but not to exceed three-thousand five-hundred dollars ($3,500.00) shall be assessed against Contractor from amounts due and payable to the Contractor under the Contract, or the Contractor and the Contractor’s Surety shall pay to the Principal Representative such sum for any deficiency, if amounts on account thereof are deducted from remaining amounts due but amounts remaining are insufficient to cover the entire assessment.

E. NOTICE IDENTIFICATION

All Notices pertaining to General Conditions or otherwise required to be given shall be transmitted in writing, to the individuals at the addresses listed below, and shall be deemed duly given when received by the parties at their addresses below or any subsequent persons or addresses provided to the other party in writing.

Notice to Principal Representative: ______________________________________________________________

With copies to: State Buildings Programs (or Delegee)
State of Colorado

Notice to Contractor: ______________________________________________________________

With copies to: ______________________________________________________________

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STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAMS

NOTICE OF SUBSTANTIAL COMPLETION

Date of Substantial Completion: 

Date to be inserted by the Principal Representative

Institution/Agency: Colorado State University - Pueblo

Project No./Name: C-9103/P-08025 / Academic Resources Center

TO:

Principal Representative

and

Contractor

This is to advise you that the Work has been reviewed, inspected and determined, to the best knowledge, information and belief of the Architect/Engineer, to be substantially complete as of the date noted above in accordance with the criteria outlined in Article 41 of The General Conditions of the Contract and the Specifications, including without limitation a) suitable for occupancy, b) inspected for code compliance with Building Inspection Records signed by code officials for the State, c) determined to be fully and comfortably usable, and d) fully cleaned and appropriate for presentation to the public.

A punch list of work to be completed, work not in compliance with the Drawings or Specifications, and unsatisfactory work is attached hereto, along with the Contractor’s schedule for the completion of each and every item identified on the punch list specifying the Subcontractor or trade responsible for the work, and the dates the completion or correction will be commenced and finished within any period indicated in the Agreement for punch list completion prior to Final Acceptance.

Except as stated on the reverse side of this Notice of Substantial Completion, all manufacturers’ warranties, other special warranties and the Contractor’s one-year obligation to perform remedial work, shall commence on the Date of Substantial Completion noted above.

This Notice of Substantial Completion shall be effective and establish the Date of Substantial Completion only when fully executed by the Contractor and the Principal Representative. The Principal Representative accepts the Work as substantially complete as of the Date of Substantial Completion herein noted. The Contractor agrees to complete or correct the Work identified on the attached punch list and to do so in accordance with attached punch list completion schedule.

Architect/Engineer Date 

Contractor Date

State Buildings Programs (or Authorized Delegate) Date 

Principal Representative (Institution or Agency) Date
The responsibilities of the Principal Representative and the Contractor for security, maintenance, heat, utilities, and insurance shall be as specified in the Contract Documents or as otherwise hereafter noted:

Exceptions, if any, to the commencement of warranties shall be:

The attached final punch list consists of ______ pages, and the attached Contractor’s schedule showing the dates of commencement and completion of each punch list item consists of ______ pages.

When completely executed, this form shall be sent to the Contractor and the Principal Representative with a copy to State Buildings Programs.
NOTICE OF FINAL ACCEPTANCE

Date of Notice of Acceptance: ____________________________

Date to be inserted by A/E after consultation with the Principal Representative

Institution/Agency: Colorado State University - Pueblo

Project No./Name: C-9103/P-08025 / Academic Resources Center

TO:

Notice is hereby given that the State of Colorado, acting by and through the ________________________, accepts as complete* the above numbered project.

State Buildings Programs (or Authorized Delegate) Date

Principal Representative (Institution or Agency) Date

*When completely executed, this form is to be sent by certified mail to the Contractor by the Principal Representative.
STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAMS

NOTICE OF CONTRACTOR’S SETTLEMENT

Institution/Agency: Colorado State University - Pueblo
Project No./Name: C-9103/P-08025 / Academic Resources Center

Notice is hereby given that on the ______ day of _____________, 20___ at __________________, Colorado, final settlement will be made by the STATE OF COLORADO with __________________________, hereinafter called the "CONTRACTOR", for and on account of the contract for the construction of a PROJECT described as:

1. Any person, co-partnership, association or corporation who has an unpaid claim against the said project, for or on account of the furnishing of labor, materials, team hire, sustenance, provisions, provender, rental machinery, tools, or equipment and other supplies used or consumed by such Contractor or any of his subcontractors in or about the performance of said work, may at any time up to and including said time of such final settlement, file a verified statement of the amount due and unpaid on account of such claim.

2. All such claims shall be filed with the Authority for College, Institution, Department or Agency.

3. Failure on the part of a creditor to file such statement prior to such final settlement will relieve the State of Colorado from any and all liability for such claim.

Dated at ______________, Colorado, this ______ day of __________________, 20___.

State Buildings Programs (or Authorized Delegate) Date

MEDIA OF PUBLICATION:

PUBLICATION DATES:
First:
Second: (At least ten (10) days prior to above settlement date)

NOTES TO EDITOR:
Transmit two (2) copies of the Affidavit of Publication, and invoice, to:
SECTION 01 10 00

SUMMARY

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Project information.
   2. Work covered by Contract Documents.
   3. Phased construction.
   4. Work by Owner.
   5. Owner-furnished products.
   6. Access to site.
   7. Work restrictions.

1.02 PROJECT INFORMATION

A. Project Identification: Academic Resources Center.
   1. Project Location: 2200 North Bonforte Boulevard, Pueblo, Colorado, 81001.

B. Owner:

   Board of Governors of the Colorado State University System
   Colorado State University – Pueblo
   2200 North Bonforte Boulevard
   Pueblo, Colorado, 81001

C. Owner's Representative / Project Manager: Alain Dalmau Architects.

D. Architect: Bennett Wagner & Grody Architects, PC.
   1. Architects Project Number: 0850.00

1.03 WORK COVERED BY CONTRACT DOCUMENTS

A. Work of the Project: Work on this project consists of additions and renovations to the existing six-story, 100,000 square foot precast concrete and steel structure. The addition will consist of a 22,000 square foot enclosure of existing exterior breezeway space.
   1. Generally, the work shall include, but not be limited to:
      a. Site work.
      b. Phased selective demolition.
      c. Interior and exterior concrete work. Miscellaneous patching of existing floors and walls.
      e. Miscellaneous carpentry and trim work, casework, solid surface fabrications.
      g. Aluminum storefront and curtainwall systems. Glazing.
h. Hollow metal and wood doors and frames. Door hardware.
i. Metal stud and gypsum board partitions, ceilings, and shaft walls. Building insulation.
j. Interior painting, tiling, resilient flooring, carpet tile, and other finishes.
k. Miscellaneous toilet accessories, lockers, and interior specialties.
l. Audience seating.
m. Passenger and service elevators.
n. Electrical, mechanical, plumbing, fire protection, and communications systems.

B. Project is designed to comply with a Gold Certification Level according to the U.S. Green Building Council's Leadership in Energy & Environmental Design (LEED) Rating System, as specified in Division 01 Section - Sustainable Design Requirements.

C. Type of Contract: Single prime contract.

1.04 PHASED CONSTRUCTION

A. The Work shall be conducted in phases, with each phase substantially complete as indicated:
1. Phase One: Tower Renovation. Work of this phase shall commence after the Notice to Proceed and be substantially complete and ready for limited occupancy 210 days after the Notice to Proceed. Full Owner occupancy is not required. Occupancy will be limited to storage of books and access by authorized staff.
2. Phase Two: Construction of Addition. Work of this phase shall commence concurrently with Phase One following the Notice to Proceed and be substantially complete and ready for occupancy within 360 days.
3. Phase Three: Abatement and renovation work in the wing shall be substantially complete and ready for occupancy within 405 days following the Notice to Proceed, 195 days after the completion of Phase One.

B. Before commencing Work of each phase, submit an updated copy of the Contractor's construction schedule showing the sequence, commencement and completion dates, and move-out and -in dates of Owner's stored materials for all phases of the Work.

C. The Construction phasing line for Phase Three work shall be coordinated by the Contractor with the Owner and Architect to be:
1. Approximately along grid line H from grid 9 west to approximately 5.4 for levels 2, 3 and roof.
2. Shall not impact or include work within or above the area of stored books.
1.05 WORK BY OWNER

A. General: Cooperate fully with Owner so work may be carried out smoothly, without interfering with or delaying work under this Contract or work by Owner. Coordinate the Work of this Contract with work performed by Owner.

B. Preceding Work: Owner will perform the following construction operations at Project site. Those operations are scheduled to be substantially complete before work under this Contract begins.
   1. Phase I of Hazardous Materials Abatement has been completed.
   2. Phase II of Hazardous materials abatement to be complete within 60 days following the completion of the Contractor’s Phase One work.

1.06 OWNER FURNISHED CONTRACTOR INSTALLED PRODUCTS

A. Owner will furnish products indicated. The Work includes receiving, unloading, handling, storing, protecting, and installing Owner-furnished products and making building services connections.
   1. Library book stacks, exclusive of end panels, and tops.
   2. Self check out (future).
   3. Book security system. See drawings for metal-free zone.
      a. Required at security system.
   4. Café equipment as identified on the Drawings.
   5. Audio-Visual equipment.
   6. Toilet Accessories as identified on Drawings.
   7. Telecommunications equipment, including racks, switches, and other equipment as identified on the Electrical Drawings.

1.07 OWNER FURNISHED – OWNER INSTALLED ITEMS

A. Owner will furnish and install products indicated:
   1. Construction fence.
   2. Room signage.

1.08 SITE ACCESS

A. General: Contractor shall have full use of Project site for construction operations during construction period. Contractor’s use of Project site is limited only by Owner’s right to perform work or to retain other contractors on portions of Project.

B. Use of Site: Limit use of Project site to work in areas indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
   1. Limits: Limit site disturbance, including earthwork and clearing of vegetation, to 40 feet beyond building perimeter; 10 feet beyond surface walkways, patios, surface parking, and utilities less than 12 inches in diameter; 15 feet beyond primary roadway curbs and main utility branch trenches; and 25 feet beyond constructed areas with permeable surfaces (such as pervious paving areas, stormwater detention facilities, and playing
fields) that require additional staging areas in order to limit compaction in the constructed area.

2. Driveways, Walkways and Entrances: Keep driveways and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
   a. Schedule deliveries to minimize use of driveways and entrances by construction operations.
   b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

C. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weathertight condition throughout construction period. Repair damage caused by construction operations.

1.09 WORK RESTRICTIONS

A. Work Restrictions, General: Comply with restrictions on construction operations.
   1. Campus schedule to be provided for days on which work is not allowed.
   2. Contractor shall comply with all applicable codes, rules, and regulations. Contractor shall obtain and pay for all permits and licenses required by codes and local authorities. All work must be inspected and approved by local authorities having jurisdiction.
   3. Contractor shall verify all conditions before commencement of work and report all discrepancies to the Owner and Architect. The Drawings reflect conditions as can reasonably inferred from visible conditions, or from drawings and information furnished by Owner, but cannot be guaranteed.
   4. All penetrations of fire resistive floors or walls shall be protected by materials and installation details that conform to Underwriter Laboratories listings for rated assemblies.
   5. All penetrations of at floors and deck above shall be sealed to prevent the migration of dust, water, construction debris, etc. to adjacent floors. Seals shall meet the fire-rating requirement of the floor/deck assembly.
   6. Contractor shall provide temporary dust enclosures between construction areas and Owner occupied areas during all demolition and construction activities. Coordinate locations with Owner’s Project Manager. If existing walls are used, then penetrations must be sealed to create a dust-proof enclosure.
   7. Contractor shall be familiar with the site and shall be responsible for incorporating all reasonably inferable conditions into the work. No claim for additional compensation or time based on unfamiliarity of visible or reasonably inferable conditions will be considered. Contractor shall warrant to the Owner that the site and existing conditions have been surveyed prior to submitting a final contract price. Discrepancies are to be reported to the Owner.
   8. Contractor shall keep the construction site clean, free and clear of debris, and shall minimize and clearly mark all physical hazards. Emergency egress paths must be maintained at all times.
   9. Contractor shall keep the site secure and free of unauthorized persons, and shall keep all exposed, existing conditions secure from vandalism or theft.
10. Asbestos and lead are anticipated to exist in work area and will be abated under separate contract. See Division 01 Section “Available Project Information” for the Hazardous Materials Investigation Report.

1.10 CONSTRUCTION ACCESS AND TRAVEL

A. See Division 01 Section “Temporary Tree and Plant Protection” for additional requirements.

B. The Contractor shall limit his construction activities, including materials storage, to areas designated by the Owner's Representative.

C. Contractor access to the site will be as permitted by the Owner. Delivery and use of cranes, heavy trucks and other heavy equipment must be prearranged by more than 72 hours through the Owner's Project Manager and the City of Pueblo.

D. Access to fire lanes must be maintained by the Contractor at all times. The Contractor will provide flag personnel during the ingress or egress of large equipment. If access way is to be temporarily disrupted, the City of Pueblo must be notified at least 20 working days in advance and reconfirmation 72 hours in advance through the Owner’s Project Manager. Road closures are to be requested in accordance with procedures established by the City of Pueblo.

E. Disruption of City of Pueblo streets must be separately permitted by the City of Pueblo and coordinated through the Owner’s Project Manager.

F. Construction Parking and Staging Areas:
   1. Work for this project must be performed within the limitations of available space and access to the site. Contractor shall adjust the means and methods of construction to allow for restrictions of the site and Contractor will locate staging area on site. Damaged sidewalks within the staging area and access ways will require replacement as part of the work for this project.
   2. The parking of Contractor’s vehicles and the private vehicles of the Contractor’s employees shall be in an area designated by the Owner's Representative and as shown on Drawings.
   3. Staging areas will be created with the agreement of the Owner's Representative. Any public streets used for staging are to be returned to their pre-project condition, including pavement repairs, pavement markings and signage, all as costs to the project. Staging area shall be secured and made physically inaccessible to public use, and shall be maintained in a manner that precludes fire and safety hazards. The staging areas shall be accessible to the Colorado State University at Pueblo and City of Pueblo Police personnel for emergency purposes.

G. Access to Campus Buildings:
   1. Contractor’s personnel are not to enter or use adjacent facilities.
   2. Contractor is to limit Contractor’s personnel to the area being modified. Contractor's personnel are to be restricted from the area remaining in use by the Owner.
   3. The intent is to prevent Contractor from bringing construction dirt into occupied areas. Where the Contractor does bring construction dirt into the area, the Contractor shall provide custodial services.
H. Protection of Personnel and Facilities:
   1. The Contractor shall provide temporary barriers or partitions as required to protect the
general public from injury due to work of this project, and to protect adjacent areas to
the building from spread of dust or dirt.
   2. Damage to existing streetlights must be reported immediately to the Owner's Project
Manager. Streetlights will be repaired by the Colorado State University at Pueblo. The
Contractor will be required to pay all repair costs.

I. Coordination:
   1. Concurrently with the work of this Contract, other Contractors may be working in
relatively close proximity. The Contractor will be responsible for coordinating their work
with that of other personnel and make no claim for failure to do so.

J. Normal Working Hours:
   1. Normal work hours are defined as 7:00 a.m. - 7:00 p.m., five days a week, Monday
through Friday.
   2. Work outside Normal Hours: Construction work or demolition work outside of normal
hours shall be scheduled 72 hours in advance with the Owner's Project Manager. Work
outside normal hours shall be subject to a maximum permissible sound level of 75
decibels (dBA), measured at the adjacent property line.

1.11 PROTECTION OF TREES AND LAWNS

A. The Contractor shall be responsible for the protection of tops, trunks, and root systems of
existing trees and shrubs on the project site. Existing trees and shrubs subject to construction
damage shall be protected by appropriate barriers to prevent damage. Installation of
protective structure shall be made before any work is started and not removed until directed
by the Owner's Representative.

B. Do not permit heavy equipment or stockpiles within the branch spread. No ropes, wires,
cables or other devices shall at any time be affixed to a tree or shrub, which may damage the
bark, break branches, or destroy its natural shape.

C. The Contractor shall be liable in cases of accidental damage to trees and shrubs, which are to
remain on the site.

D. The Contractor shall notify the Owner immediately in cases of accidental damage so that
proper repairs can be made. Cost of such repairs are to be assessed to the Contractor. The
Contractor shall not attempt to make such repairs himself.

E. All removal and pruning of trees must be approved by the Owner. It is the Contractor's
responsibility to coordinate and to secure approval for work on these areas.

F. Evaluation of trees or shrubs damaged beyond repair shall be made on the basis of
replacement cost, if replaceable, with material of equal size. In cases where it would not be
possible to replace a tree with one of equal size, trees shall be evaluated on the basis of the
G. Lawn Areas:
   1. Contractor's vehicles may not be driven into lawn areas without prior approval of the Owner's Representative. In cases where it is necessary to drive vehicles, the Contractor shall provide planking material upon which to drive. The Contractor shall be held responsible for damages if these procedures are not followed.
   2. Lawn areas disturbed by construction shall be repaired by and paid for by the Contractor.

1.12 APPLICABLE CODES
B. International Fire Code (IFC), 2006 edition
C. International Mechanical Code (IMC), 2006 edition
E. National Electrical Code (NEC), 2008 edition
F. ICC A117.1, 2003 edition

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION
PART 1 - GENERAL

1.01 SUMMARY

A. Section includes administrative and procedural requirements for unit prices.

B. Related Sections:
   1. Division 01 Section "Contract Modification Procedures" for procedures for submitting and handling Change Orders.
   2. Division 01 Section "Quality Requirements" for general testing and inspecting requirements.

1.02 DEFINITIONS

A. Unit price is an amount incorporated in the Agreement, applicable during the duration of the Work as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, added to or deducted from the Contract Sum by appropriate modification, if the scope of Work or estimated quantities of Work required by the Contract Documents are increased or decreased.

1.03 PROCEDURES

A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, applicable taxes, overhead, and profit.

B. Measurement and Payment: Refer to individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.

C. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner's expense, by an independent surveyor acceptable to Contractor.

D. List of Unit Prices: A schedule of unit prices is included in Part 3. Specification Sections referenced in the schedule contain requirements for materials described under each unit price.

PART 2 - PRODUCTS (Not Used)
PART 3 - EXECUTION

3.01 SCHEDULE OF UNIT PRICES

A. Drilled Micropiles:
   1. Unit Price 1: Section 31 63 33 – Drilled Micropiles: Over-run of Drilled Micropiles, per
      lineal foot. Base bid shall include 500-feet of over-run.
   2. Unit Price 2: Section 31 63 33 – Drilled Micropiles: Under-run of Drilled Micropiles, per
      lineal foot.

B. Paving:
   1. Unit Price 3: - Section 32 12 16 - Asphalt Paving: Additional or less asphaltic concrete
      pavement complying with the requirements of Section 32 12 16 in 1-inch thickness, per
      square yard.
   2. Unit Price 4: Section 32 13 13 - Concrete Paving: Additional or less concrete sidewalk,
      4-inches thick, complying with the requirements of Section 32 13 13, including subgrade
      preparation, placing, finishing, and curing, per square yard.

C. Gypsum Board Assemblies:
   1. Unit Price 5: Gypsum Board: Additional or less of Partition Type 1 as shown on Drawing
      A8.3, and as specified in Sections 09 22 16 – Non-Structural Metal Framing and 09 29 00 –
      Gypsum Board, including metal stud framing, sound batts, gypsum board, joint
      compound, finishing, accessories, and painting as specified in Section 09 91 00 –
      Painting. Installed to structure above, assume 14 foot height, per lineal foot.
   2. Unit Price 6: Additional or less of Partition Type 2 as shown on Drawing A8.3, and as
      specified in Sections 09 22 16 – Non-Structural Metal Framing and 09 29 00 – Gypsum
      Board, including metal stud framing, sound batts, gypsum board, joint compound,
      finishing, accessories, and painting as specified in Section 09 91 00 – Painting. Installed
      to structure above, assume 14-foot height, per lineal foot.

D. Carpet Tile:
   1. Unit Price 7: Section 09 68 13 – Tile Carpeting: Additional or less field carpet tile as
      specified in Section 09 68 13, including required accessories, surface preparation, and
      installation, per square yard.
   2. Unit Price 8: Section 09 68 13 – Tile Carpeting: Additional or less accent carpet tile as
      specified in Section 09 68 13, including required accessories, surface preparation, and
      installation, per square yard.

E. Painting:
   1. Unit Price 9: Section 09 91 00 – Painting: Additional or less painting of gypsum board,
      as specified in Section 09 91 00, including surface preparation, primer, and finish coats,
      per square foot.
F. Electrical Items:
   1. Unit Price 10: Section 26 27 16 – Wiring Devices: Single light switch, including 30 feet of conduit and wire, connected to the nearest fixture circuit, per each.

   2. Unit Price 11: Section 26 27 16 – Wiring Devices: Duplex wall mounted outlet, including 30 feet of conduit and wire, connected to the nearest adjacent receptacle, per each.

G. Fire Alarm Devices:
   1. Unit Price 12: Section 28 31 00 – Fire Alarm and Detection Systems: Speaker-Strobe devices materials and installation labor, unit price per device.

   2. Unit Price 13: Section 28 31 00 – Fire Alarm and Detection Systems: Strobe devices materials and installation labor, unit price per device.

   3. Unit Price 14: Section 28 31 00 – Fire Alarm and Detection Systems: Speaker devices materials and installation labor, unit price per device.

H. Cleaning Exterior Concrete / Precast:
   1. Unit Price #15: Section 03 01 35 – Cleaning of Existing Concrete: Exterior concrete/precast concrete washing. Per 1000 square feet. Note: This unit price shall be for Owner requested additional cleaning and not cleaning required by construction activities.

I. Duct Banks and Manholes:
   1. Unit Price #16: Section 26 05 43 – Duct Banks and Manholes: Additional electrical duct bank, per lineal foot.

   2. Unit Price #17: Section 26 05 43 – Duct Banks and Manholes: Additional electrical manholes, per each.

J. Sandblasting (Abrasive Blast Finish):
   1. Unit Price #18: Section 03 30 00 – Cast-In-Place Concrete: Additional sandblasting. Note: This unit price will be for additional Owner requested additional sandblasting and not sandblasting as indicated on Drawings.

END OF SECTION
PART 1 - GENERAL

1.01 SUMMARY

A. Section includes administrative and procedural requirements for alternates.

1.02 DEFINITIONS

A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the Bidding Requirements that may be added to or deducted from the base bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.

1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.

2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

1.03 PROCEDURES

A. Coordination: Modify or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.

1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.

B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated modifications to alternates.

C. Execute accepted alternates under the same conditions as other work of the Contract.

D. Schedule: A schedule of alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.
PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 SCHEDULE OF ADDITIVE ALTERNATES

A. Additive Alternate No. 1:
   1. Base Bid: The existing south plaza, planter and site walls shall remain in place.
   2. Alternate: The existing south plaza, planter and site walls shall be demolished and replaced with construction as indicated on the drawings.

B. Additive Alternate No. 2:
   2. Alternate: The tall book shelves shall be covered with tops as indicated on the Drawings.

C. Additive Alternate No. 3:
   1. Base Bid: The (5) five existing pedestrian level lights in the plaza east of the building shall remain in place and be reconnected to the renovated building power.
   2. Alternate: Demolish and replace the (5) pedestrian lights in the plaza east of the building as indicated on the Drawings.

D. Additive Alternate No. 4:
   1. Base Bid: The existing basement slab shall remain in place.
   2. Alternate: Demolish and Replace the basement slab as indicated on the Drawings.

E. Additive Alternate No. 5:
   1. Base Bid: The existing Sidewalk Vertical Reciprocating Conveyor shall remain in place and be reconnected to the renovated building power.
   2. Alternate: Demolish the existing Sidewalk Vertical Reciprocating Conveyor and replace as indicated on the Drawings and as specified.

F. Additive Alternate No. 6:
   1. Base Bid: The existing concrete stairs shall be cleaned and resealed.
   2. Alternate: The existing concrete stairs shall be covered with Resilient Stair treads and Risers as specified and scheduled.

G. Additive Alternate No. 7:
   1. Base Bid: No CO2 sensors shall be installed in the renovated building.
   2. Alternate: Add CO2 sensors per the plans and as specified.

END OF SECTION
SECTION 01 25 00
SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes administrative and procedural requirements for substitutions.

B. Related Sections:
   1. Division 01 Section "Allowances" for products selected under an allowance.
   2. Division 01 Section "Alternates" for products selected under an alternate.
   3. Division 01 Section "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.
   4. Division 01 Section “Sustainable Design Requirements” for specific product requirements and limitations for substitutions.
   5. Divisions 02 through 49 Sections for specific requirements and limitations for substitutions.

1.02 DEFINITIONS

A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.
   1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, or regulatory changes.
   2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Owner.

1.03 SUBMITTALS

A. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
   1. Substitution Request – During the Bidding Period: Use CSI Form 1.5C or form acceptable to Owner and Architect.
   2. Substitution Request – Post Bid: Not permitted except as allowed elsewhere in this section.
   3. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
      a. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.
      b. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors, that will be necessary to accommodate proposed substitution. Changes in the Work are the Contractor’s financial and performance responsibility.
c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable specification section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.

d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.

e. Samples, where applicable or requested.

f. Certificates and qualification data, where applicable or requested.

g. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.

h. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.

i. Research reports evidencing compliance with building code in effect for Project, from ICC-ES or applicable code organization.

j. Detailed comparison of Contractor's construction schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.

k. Cost information, including a proposal of change, if any, in the Contract Sum.

l. Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.

m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

4. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.


b. Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.

1.04 QUALITY ASSURANCE

A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage qualified testing agency to perform compatibility tests recommended by manufacturers.
1.05 PROCEDURES

A. Coordination: Modify or adjust affected work as necessary to integrate work of the approved substitutions.

PART 2 - PRODUCTS

2.01 SUBSTITUTIONS

A. Substitutions for Cause: Submit requests for substitution immediately upon discovery of need for change, but not later than 15 days prior to time required for preparation and review of related submittals. Substitutions relating to delivery time of an item shall only be made prior to Bid.

1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
   a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
   b. Substitution request is fully documented and properly submitted.
   c. Requested substitution will not adversely affect Contractor's construction schedule.
   d. Requested substitution has received necessary approvals of authorities having jurisdiction.
   e. Requested substitution is compatible with other portions of the Work.
   f. Requested substitution has been coordinated with other portions of the Work.
   g. Requested substitution provides specified warranty.
   h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

B. Substitutions for Convenience: Not allowed.

PART 3 - EXECUTION (Not Used)

END OF SECTION
SUBSTITUTION REQUEST
(During the Bidding Phase)

Project: **Colorado State University - Pueblo**

Academic Resource Center

To: ____________________________

From: __________________________

Date: __________________________

A/E Project Number: **08150.00**

Re: ____________________________

Contract For: ____________________

Specification Title: ______________ Description: ____________________________

Section: ___________ Page: ___________ Article/Paragraph: ______________________

Proposed Substitution: ____________________________

Manufacturer: ___________ Address: ___________ Phone: ______________________

Trade Name: ___________ Model No.: ____________________________

Attached data includes product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation.

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

Submitted by: ____________________________

Signed by: ____________________________

Firm: ____________________________

Address: ____________________________

Telephone: ____________________________

A/E’s REVIEW AND ACTION

☐ Substitution approved - Make submittals in accordance with Specification Section 01 25 00.
☐ Substitution approved as noted - Make submittals in accordance with Specification Section 01 25 00.
☐ Substitution rejected - Use specified materials.
☐ Substitution Request received too late - Use specified materials.

Signed by: ____________________________ Date: ____________________________

Supporting Data Attached: ☐ Drawings ☐ Product Data ☐ Samples ☐ Tests ☐ Reports ☐
SECTION 01 26 00

CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes administrative and procedural requirements for handling and processing Contract modifications.

B. Related Sections:
   1. Division 01 Section "Product Requirements" for administrative procedures for handling requests for substitutions made after Contract award.

1.02 MINOR CHANGES IN THE WORK

A. Architect will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on AIA Document G710, "Architect's Supplemental Instructions."

1.03 PROPOSAL REQUESTS

A. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.

   1. Proposal Requests issued by Architect are not instructions either to stop work in progress or to execute the proposed change.

   2. Within time specified in Proposal Request or 14 days, when not otherwise specified, after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.

      a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.

      b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.

      c. Include costs of labor and supervision directly attributable to the change.

      d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

      e. Quotation Form: Use forms acceptable to Owner and Architect.

B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Architect.

   1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.

3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.

4. Include costs of labor and supervision directly attributable to the change.

5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

6. Comply with requirements in Division 01 Section "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.

7. Proposal Request Form: Use form acceptable to Owner and Architect.

1.04 ADMINISTRATIVE CHANGE ORDERS

A. Unit Price Adjustment: Refer to Division 01 Section "Unit Prices" for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect measured scope of unit price work.

1.05 CHANGE ORDER PROCEDURES


1. The Change Order Bulletin shall contain a complete description of change in the Work. It shall also designate the method to be followed to determine change in the Contract Sum or the Contract Time.

B. Change Order Proposal: Contractor will prepare a Change Order Proposal on State of Colorado Form SC-6.312 – Change Order Proposal. Change Order Proposal shall include Contractor’s detailed proposal for work including additional / reduced costs and time in accordance with Article 35 of the General Conditions. Sample form attached at the end of this Section.

C. Change Order: Following review, Architect will issue a Change Order on State of Colorado Form SC-6.312 – Change Order to finalize the work and costs included in the Change Order Proposal. No work is to proceed until Change Order has been fully executed by Owner. Sample form attached at the end of this Section.

1. Package order for signature and approval, all stapled together:
   a. Change Order.
   b. Change Order Proposal with back-up documentation.

D. Documentation: Maintain detailed records on a time and material basis of work required by the Change Order Bulletin.

1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.
PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION
### CHANGE ORDER

Change Order No: ___________________________ Date ___________________________

Contractor: ____________________________________________

Institution or Agency: ___________________________________

Project No./Name: _______________________________________

Your Change Order Proposal, dated ____________, is hereby being designated for approval of the following work:

(Note: If more space is needed for description of work, attach additional 8-1/2” x 11” sheets hereto.)

This change order was originated by the Contractor [ ], Architect/Engineer [ ], State [ ], and I/We do hereby recommend acceptance and approval of the change to the Contractor’s Agreement Dated ______ which is by this reference, made a part hereof, and identified as Exhibit ______ with an increase [ ] , a decrease [ ] , no change [ ] , of $______.

Contract completion date is extended ______ days [ ], is not extended [ ]. New completion date is ______ (Month/Day/Year)

*Persons signing for Architect/Engineer/Contractor hereby swear and affirm that they are authorized to act on Architect/Engineer/Contractor’s behalf and acknowledge that the State is relying on their representations to that effect. Principal is not a recognized title and will not be accepted.

<table>
<thead>
<tr>
<th>Architect/Engineer Firm</th>
<th>Name and Title (print)</th>
<th>Date</th>
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</thead>
<tbody>
<tr>
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<table>
<thead>
<tr>
<th>Contractor (Name of Firm)</th>
<th>Name and Title (print)</th>
<th>Date</th>
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<tbody>
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<table>
<thead>
<tr>
<th>Institution or Agency</th>
<th>Principal Representative (Signature)</th>
<th>Date</th>
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### CONTRACT STATUS

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<tr>
<th>Original Contract Value</th>
<th>$ _______________</th>
<th>STATE BUILDINGS PROGRAMS (or Authorized Delegate)</th>
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<tbody>
<tr>
<td>Previous increases by CO/Amend</td>
<td>$ _______________</td>
<td>DATE</td>
</tr>
<tr>
<td>Previous decreases by CO/Amend</td>
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</tr>
<tr>
<td>Value After Prior CO/Amend</td>
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</tr>
<tr>
<td>This CO/Amend Increases [ ] Decreases [ ]</td>
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<tr>
<td><strong>CURRENT CONTRACT VALUE</strong></td>
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<td>STATE CONTROLLER (or Authorized Delegate)</td>
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<td></td>
<td>DATE</td>
</tr>
</tbody>
</table>

(Verification)
CHANGE ORDER BULLETIN

Change Order Bulletin No: ___________________________ Date ___________________________
Contractor: _______________________________________________________________________
Institution or Agency: _______________________________________________________________________
Project No./Name: _______________________________________________________________________
Description of Work: _______________________________________________________________________

This bulletin is issued to define the scope of revision in drawings and/or specifications for a contemplated change order. The work called for by these revisions shall be in accordance with the requirements of the original contract documents.

Please prepare and submit a proposal for the changes described below. For pricing use State Form SC-6.312. A formal change order State Form SC-6.31 will be issued after approval of your proposal by the Principal Representative and the Architect. Your proposal shall include a statement as to the effect this change will have on the time for completion of the project.

This bulletin is NOT an authorization to proceed.

DESCRIPTION OF CHANGE:

SPECIFICATION REVISIONS:

STATUS OF EXISTING WORK:

PREPARED BY: ________________________________________________
ARCHITECT/ENGINEER OR CONTRACTOR

APPROVED BY: _________________________________________________
PRINCIPAL REPRESENTATIVE
(INSTITUTION or AGENCY)
## CHANGE ORDER PROPOSAL

### PART I - WORK PERFORMED BY CONTRACTOR

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<th>Line</th>
<th>Description</th>
<th>Cost</th>
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<tr>
<td>1</td>
<td>Direct Labor Costs</td>
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<td>2</td>
<td>Labor Overhead (Direct Labor Burdens) (__________% \times \text{Line 1})</td>
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<tr>
<td>3</td>
<td>Total Contractor's Labor Costs (Lines 1 and 2)</td>
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<td>4</td>
<td>Direct Materials Costs</td>
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<td>Materials Overhead (Delivery Costs &amp; Taxes) (__________% \times \text{Line 4})</td>
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<td>6</td>
<td>Total Materials Costs (Lines 4 and 5)</td>
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<td>7</td>
<td>Total Equipment Costs</td>
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<tr>
<td>8</td>
<td>PART I - TOTAL CONTRACTOR'S L, M, &amp; E COSTS (Lines 3, 6 and 7)</td>
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### PART II - WORK PERFORMED BY SUBCONTRACTOR

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<td>10</td>
<td>Labor Overhead (Direct Labor Burdens) (__________% \times \text{Line 10})</td>
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<td>11</td>
<td>Total Subcontractor's Labor Cost (Lines 9 and 10)</td>
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<td>12</td>
<td>Direct Materials Costs</td>
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<tr>
<td>13</td>
<td>Materials Overhead (Delivery Costs &amp; Taxes) (__________% \times \text{Line 13})</td>
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<td>Total Subcontractor's Materials Costs (Lines 12 and 13)</td>
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<td>15</td>
<td>Total Subcontractor's Equipment Costs</td>
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<td>16</td>
<td>Total Subcontractor’s L, M &amp; E Costs (Lines 11, 14, and 15)</td>
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<td>17</td>
<td>Subcontractor's Overhead (Indirect Costs) (__________% \times \text{Line 16})</td>
<td>$</td>
</tr>
<tr>
<td>18</td>
<td>Subcontractor's Profit (__________% \times \text{Line 16}) or (2 ½ % Deduct)</td>
<td>$</td>
</tr>
<tr>
<td>19</td>
<td>PART II - TOTAL SUBCONTRACTOR'S COSTS (Lines 16, 17, and 18)</td>
<td>$</td>
</tr>
</tbody>
</table>

### PART III - CONTRACTOR’S OVERHEAD & PROFIT

<table>
<thead>
<tr>
<th>Line</th>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>Contractor’s Overhead (Indirect Costs) (__________% \times \text{Part I Total})</td>
<td>$</td>
</tr>
<tr>
<td>21</td>
<td>Contractor’s Profit (__________% \times \text{Part I Total})</td>
<td>$</td>
</tr>
<tr>
<td>22</td>
<td>PART III - TOTAL CONTRACTOR OVERHEAD &amp; PROFIT (Lines 20 and 21)</td>
<td>$</td>
</tr>
</tbody>
</table>

### PART IV - CONTRACTOR’S MARKUP ON SUBCONTRACTOR

<table>
<thead>
<tr>
<th>Line</th>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>23</td>
<td>Contractor’s Commission on Subcontractor (__________% \times \text{Part II Total})</td>
<td>$</td>
</tr>
<tr>
<td>24</td>
<td>Contractor’s Profit on Subcontractor (__________% \times \text{Part II Total}) or (2 ½ % Deduct)</td>
<td>$</td>
</tr>
<tr>
<td>25</td>
<td>PART IV - TOTAL CONTRACTOR MARKUP ON SUBCONTRACTOR (Lines 23 &amp; 24)</td>
<td>$</td>
</tr>
</tbody>
</table>

### PART V - SUBTOTAL C.O. PROPOSAL

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Parts I and II and III and IV)</td>
<td>$</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Sum of Totals: Parts V and VI)</td>
<td>$</td>
</tr>
</tbody>
</table>

### PART VII - GRAND TOTAL CHANGE ORDER PROPOSAL

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Sum of Totals: Parts V and VI)</td>
<td>$</td>
</tr>
</tbody>
</table>

### PART VIII - CONTRACT TIME

Completion Date (IS) (IS NOT) EXTENDED _______ calendar days as a result of this proposal.

### CONTRACTOR’S CERTIFICATE:

This is to certify that, to the best of my knowledge and belief, the cost/price data submitted in response to the listed C.O. Bulletin, are accurate, complete and current as of _______.

Firm: ____________________
Name & Title: ____________________
Signature: ____________________
Date: ____________________

*The proposal shall remain in full force and effect for a period of _______ calendar days from date of signature.

### ARCHITECT/ENGINEER’S CERTIFICATE:

This is to certify that I have analyzed the proposal and find, to the best of my knowledge and belief, that the proposal represents current, fair, factual and competitive cost/price data.

Firm: ____________________
Name & title: ____________________
Signature: ____________________
Date: ____________________

### PRINCIPAL REPRESENTATIVE

(Institution or Agency) ____________________
Date: ____________________

### STATE BUILDINGS PROGRAMS

(or Authorized Delegate) ____________________
Date: ____________________
INSTRUCTIONS FOR COMPLETING “CHANGE ORDER PROPOSAL”
COST/PRICE DATA SUMMARY (STATE FORM SC-6.312)

BULLETIN NUMBER/DATED: Insert C.O. Bulletin No. and Date Issued
LEFT HAND BOX: Fill in Contractor’s Name; State Project Number and Title
RIGHT HAND BOX: Fill in Description of Changes from Bulletin, noting exceptions that are listed in the Bulletin but are excluded; i.e., not priced on this form.

PART I - WORK PERFORMED BY CONTRACTOR:
Line 1. Direct Labor Costs: Fill in subtotal of direct labor costs, which includes base rates plus applicable fringe benefits.
   On Contractor’s letterhead/spreadsheet show costs as follows:
<table>
<thead>
<tr>
<th>Trade</th>
<th>Rate</th>
<th>Hours</th>
<th>Extended Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
   Direct Labor Costs = $

Line 2. Labor Overhead (Direct Labor Burdens, etc.): Fill in as a percentage of Line 1.
On letterhead/spreadsheet, show direct materials costs as follows:
<table>
<thead>
<tr>
<th>Materials</th>
<th>Units</th>
<th>Unit Cost</th>
<th>Extended Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
   Direct Materials Costs = $

Line 5. Materials Overhead: Fill in as percentage cost of Line 4. Overhead costs include delivery, taxes, insurance costs, etc. (As mutually agreed upon at contract signing)
Line 6. Total Materials Costs: Fill in total of lines 4 and 5.
Line 7. Total Equipment Costs: Fill in total equipment costs including indirect overhead costs in hourly rate - except indirect labor costs.
On letterhead/spreadsheet show total equipment costs as follows:
<table>
<thead>
<tr>
<th>Description</th>
<th>Rate</th>
<th>Hours</th>
<th>Extended Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
   Total Equipment Cost = $


PART II - WORK PERFORMED BY SUBCONTRACTOR:
Line 9. Direct Labor Costs: Fill in subtotal of direct labor costs, which includes base rates plus applicable fringe benefits.
On Subcontractor’s letterhead/spreadsheet show costs by trade, rate, hours and extended costs. See Instructions for line 1.
Line 10. Labor Overhead (Direct Labor Burdens, etc.): Fill in as a percentage of Line 9.
On letterhead/spreadsheet, show direct materials costs by materials, units, unit costs and extended costs. See Instructions for line 4.
Line 13. Materials Overhead: Fill In as a percentage of line 12. Overhead costs include delivery, taxes, insurance costs, etc.
Line 15. Total Subcontractor’s Equipment Costs: Fill in total equipment costs including indirect overhead costs in hourly rate - except indirect labor costs.
   On letterhead/spreadsheet show total equipment costs by description, rate, hours and extended costs. See Instructions for line 7.
Line 16. Total Subcontractor’s Labor, Materials and Equipment (L, M & E) Costs: Fill in total of lines 11, 14 and 15.
Line 17. Subcontractor’s Overhead (Indirect Costs): Fill in as percentage cost of line 16. See Article 35 of General Conditions.

PARTS III THROUGH VIII - Self-explanatory.

CERTIFICATIONS
A. The Contractor, who prepares this proposal form, certifies the cost/price data by signing, dating, and forwarding same to the Architect/Engineer (or Consultant) for further action.
B. The Architect/Engineer (or Consultant) reviews and analyzes the cost/price data for the requirements that these are: 1) currently prevalent, 2) reasonably fair, 3) factually applicable, and 4) equivalently competitive market selling prices. The Architect/Engineer (or Consultant) may negotiate—after receipt of the cost proposal—any or all of the cost elements of the proposal to support a recommendation of acceptance to the Principal Representative. Certification by the A/E (or Consultant) of the above requirements is made upon his signature. The Architect/Engineer (or Consultant) forwards the proposal with the supporting back-up to the Agency.
C. Authority for the Institution or Agency (usually the Principal Representative) reviews the proposal, signs, dates, and forwards to State Buildings Programs or Delegate for final action.
D. State Buildings Programs or Delegate reviews the cost proposal, with all supporting back-up, for technical and procedural requirements and, if in order, signs and dates the proposal.
SECTION 01 29 00

PAYMENT PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY

A. This Section specifies administrative and procedural requirements necessary to prepare and process Applications for Payment.

B. Related Sections:
   1. Division 01 Section "Unit Prices" for administrative requirements governing the use of unit prices.
   2. Division 01 Section "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.
   3. Division 01 Section "Construction Progress Documentation" for administrative requirements governing the preparation and submittal of the Contractor's construction schedule.
   4. Division 01 Section "Submittal Procedures" for administrative requirements governing the preparation and submittal of the submittal schedule.
   5. Division 01 Section "Sustainable Design Requirements" for administrative requirements governing submittal of cost breakdown information required for LEED documentation.

1.02 DEFINITIONS

A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

1.03 SCHEDULE OF VALUES

A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule. Cost-loaded Critical Path Method Schedule may serve to satisfy requirements for the schedule of values.
   1. Correlate line items in the schedule of values with other required administrative forms and schedules, including the following:
      a. Application for Payment forms with continuation sheets.
      b. Submittal schedule.
      c. Items required to be indicated as separate activities in Contractor's construction schedule.
   2. Submit the schedule of values to Architect at earliest possible date but no later than seven days before the date scheduled for submittal of initial Applications for Payment.
   3. Subschedules for Phased Work: Where the Work is separated into phases requiring separately phased payments, provide subschedules showing values correlated with each phase of payment.
4. **Subschedules for Separate Elements of Work:** Where the Contractor's construction schedule defines separate elements of the Work, provide subschedules showing values correlated with each element.

**B. Format and Content:** Use the Project Manual table of contents as a guide to establish line items for the schedule of values. Provide at least one line item for each Specification Section.

1. **Identification:** Include the following Project identification on the schedule of values:
   a. Project name and location.
   b. Name of Architect.
   c. Architect's project number.
   d. Contractor's name and address.
   e. Date of submittal.

2. Arrange schedule of values consistent with format of AIA Document G703 or form acceptable to Owner and Architect.

3. Arrange the schedule of values in tabular form with separate columns to indicate the following for each item listed:
   a. Related Specification Section or Division.
   b. Description of the Work.
   c. Name of subcontractor.
   d. Name of manufacturer or fabricator.
   e. Name of supplier.
   f. Change Orders (numbers) that affect value.
   g. Dollar value of the following, as a percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.
      1) Labor.
      2) Materials.
      3) Equipment.

4. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents. Provide multiple line items for principal subcontract amounts in excess of five percent of Contract Sum.
   a. Include separate line items under Contractor and principal subcontracts for LEED documentation and other project closeout requirements in an amount totaling five percent of the Contract Sum and subcontract amount.

5. Round amounts to nearest whole dollar; total shall equal the Contract Sum.

6. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
   a. Differentiate between items stored on-site and items stored off-site. If required, include evidence of insurance.

7. Provide separate line items in the schedule of values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
8. Purchase Contracts: Provide a separate line item in the schedule of values for each purchase contract. Show line-item value of purchase contract. Indicate owner payments or deposits, if any, and balance to be paid by Contractor.

9. Each item in the schedule of values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
   a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the schedule of values or distributed as general overhead expense, at Contractor's option.

10. Schedule Updating: Update and resubmit the schedule of values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.04 APPLICATIONS FOR PAYMENT

A. Each Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner.
   1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.

B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.
   1. Submit draft copy of Application for Payment seven days prior to due date for review by Architect.

C. Application for Payment Forms: Use State of Colorado Form SBP-7.2 Certificate for Contractor’s Payment for Applications for Payment. Sample copy is included in the Project Manual.

D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.
   1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
   2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.
   3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
   4. Indicate separate amounts for work being carried out under Owner-requested project acceleration.

E. Stored Materials: Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.
   1. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment, for stored materials.
2. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.

3. Provide summary documentation for stored materials indicating the following:
   a. Materials previously stored and included in previous Applications for Payment.
   b. Work completed for this Application utilizing previously stored materials.
   c. Additional materials stored with this Application.
   d. Total materials remaining stored, including materials with this Application.

F. Transmittal: Submit three signed and notarized original copies of each Application for Payment to Architect by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments if required.
   1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

G. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's liens from subcontractors, sub-subcontractors, and suppliers for construction period covered by the previous application.
   1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
   2. When an application shows completion of an item, submit conditional final or full waivers.
   3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
   4. Submit final Application for Payment with or preceded by conditional final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
   5. Waiver Forms: Submit waivers of lien on forms, executed in a manner acceptable to Owner.

H. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
   1. List of subcontractors.
   2. Schedule of values.
   3. Contractor's construction schedule (preliminary if not final).
   4. Products list (preliminary if not final).
   5. Schedule of unit prices.
   6. Submittal schedule (preliminary if not final).
   7. List of Contractor's staff assignments.
   8. List of Contractor's principal consultants.
   11. Initial progress report.
   13. Certificates of insurance and insurance policies.
   15. Data needed to acquire Owner's insurance.
I. Application for Payment at Substantial Completion: After issuing the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
   1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
   2. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

J. Final Payment Application: Submit final Application for Payment in accordance with Article 41 of the General Conditions, with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
   1. Evidence of completion of Project closeout requirements.
   2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
   3. Updated final statement, accounting for final changes to the Contract Sum.
   4. State of Colorado Form SBP-07 “Notice of Substantial Completion.”
   5. State of Colorado Form SC-6.27 “Notice of Final Acceptance.”
   6. State of Colorado Form SC-7.3 “Notice of Contractor’s Settlement.”
   7. Evidence that claims have been settled.
   8. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION
CERTIFICATE FOR CONTRACTOR'S PAYMENT

**PAY APPLICATION #:**

**FROM:**

**TO:**

**P.O. NO.:**

**CONTRACTOR:**

**AGENCY/INSTITUTION:**

**PROJECT #/TITLE:**

<table>
<thead>
<tr>
<th>AMENDMENTS/CHANGE ORDER SUMMARY</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Deductions (L)</strong></td>
</tr>
<tr>
<td>Prior amendments / Change Orders CO#'s:</td>
</tr>
<tr>
<td>Total</td>
</tr>
<tr>
<td>Approved This Period</td>
</tr>
<tr>
<td>Number</td>
</tr>
<tr>
<td>Current to Date Total Amount Earned (Due to Date (I))</td>
</tr>
<tr>
<td>$0.00</td>
</tr>
<tr>
<td>Prior Payments Total Amount Earned</td>
</tr>
<tr>
<td>Total Approved this Period</td>
</tr>
<tr>
<td>Totals</td>
</tr>
<tr>
<td>Net change by Amendments / Change Orders (L + M)</td>
</tr>
</tbody>
</table>

Contractor certifies that all work and materials included in this estimate complies with the terms and conditions of the construction contract and authorized changes thereto.

**ARCHITECTS/ENGINEER'S CERTIFICATION**

In accordance with the Contract and this Application for Payment, the above Contractor is entitled to a payment of: **$0.00**

**INSTITUTION/AGENCY (or Authorized Delegate):**

**Date:**

**STATE BUILDINGS PROGRAMS (or Authorized Delegate):**

**Date:**

**CONTRACTOR:**

**Date:**

**ARCHITECT/ENGINEER:**

**Date:**
SECTION 01 31 00

PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
   1. General project coordination procedures.
   2. Administrative and supervisory personnel.
   3. Coordination drawings.
   4. Requests for Information (RFIs).
   5. Project Web site.
   6. Project meetings.

B. Each contractor shall participate in coordination requirements. Certain areas of responsibility are assigned to a specific contractor.

C. Related Sections:
   1. Division 01 Section "Construction Progress Documentation" for preparing and submitting Contractor's construction schedule.
   2. Division 01 Section "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
   3. Division 01 Section "Closeout Procedures" for coordinating closeout of the Contract.
   4. Division 01 Section "General Commissioning Requirements" for coordinating the Work with Owner's commissioning authority.

1.02 DEFINITIONS

A. RFI: Request from Owner, Architect, or Contractor seeking information from each other during construction.

1.03 COORDINATION

A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections, that depend on each other for proper installation, connection, and operation.
   1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
   2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
   3. Make adequate provisions to accommodate items scheduled for later installation.
B. Coordination: Each contractor shall coordinate its construction operations with those of other contractors and entities to ensure efficient and orderly installation of each part of the Work. Each contractor shall coordinate its operations with operations, included in different Sections, that depend on each other for proper installation, connection, and operation.
   1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
   2. Coordinate installation of different components with other contractors to ensure maximum performance and accessibility for required maintenance, service, and repair.
   3. Make adequate provisions to accommodate items scheduled for later installation.

C. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
   1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.

D. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
   1. Preparation of Contractor's construction schedule.
   2. Preparation of the schedule of values.
   3. Installation and removal of temporary facilities and controls.
   4. Delivery and processing of submittals.
   5. Progress meetings.
   6. Preinstallation conferences.
   7. Project closeout activities.
   8. Startup and adjustment of systems.
   9. Project closeout activities.

E. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.
   1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. Refer to other Sections for disposition of salvaged materials that are designated as Owner's property.

1.04 COORDINATION DRAWINGS

A. Coordination Drawings, General: Prepare coordination drawings in accordance with requirements in individual Sections, where installation is not completely shown on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.
   1. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on standard printed data. Include the following information, as applicable:
a. Use applicable Drawings as a basis for preparation of coordination drawings. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.

b. Coordinate the addition of trade-specific information to the coordination drawings by multiple contractors in a sequence that best provides for coordination of the information and resolution of conflicts between installed components before submitting for review.

c. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.

d. Indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation.

e. Show location and size of access doors required for access to concealed dampers, valves, and other controls.

f. Indicate required installation sequences.

g. Indicate dimensions shown on the Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternate sketches to Architect indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.

B. Coordination Drawing Organization: Organize coordination drawings as follows:

1. Floor Plans and Reflected Ceiling Plans: Show architectural and structural elements, and mechanical, plumbing, fire protection, fire alarm, and electrical Work. Show locations of visible ceiling-mounted devices relative to acoustical ceiling grid. Supplement plan drawings with section drawings where required to adequately represent the Work.

2. Plenum Space: Indicate subframing for support of ceiling and wall systems, mechanical and electrical equipment, and related Work. Locate components within ceiling plenum to accommodate layout of light fixtures indicated on Drawings. Indicate areas of conflict between light fixtures and other components.

3. Mechanical Rooms: Provide coordination drawings for mechanical rooms showing plans and elevations of mechanical, plumbing, fire protection, fire alarm, and electrical equipment.

4. Structural Penetrations: Indicate penetrations and openings required for all disciplines.

5. Slab Edge and Embedded Items: Indicate slab edge locations and sizes and locations of embedded items for metal fabrications, sleeves, anchor bolts, bearing plates, angles, door floor closers, slab depressions for floor finishes, curbs and housekeeping pads, and similar items.

6. Mechanical and Plumbing Work: Show the following:
   a. Sizes and bottom elevations of ductwork, piping, and conduit runs, including insulation, bracing, flanges, and support systems.
   b. Dimensions of major components, such as dampers, valves, diffusers, access doors, cleanouts and electrical distribution equipment.
   c. Fire-rated enclosures around ductwork.

7. Electrical Work: Show the following:
   a. Runs of vertical and horizontal conduit 1-1/4 inch diameter and larger.
   b. Light fixture, exit light, emergency battery pack, smoke detector, and other fire alarm locations.
c. Panel board, switch board, switchgear, transformer, busway, generator, and motor control center locations.

d. Location of pull boxes and junction boxes, dimensioned from column center lines.

8. Fire Protection System: Show the following:
   a. Locations of standpipes, mains piping, branch lines, pipe drops, and sprinkler heads.

9. Review: Architect will review coordination drawings to confirm that the Work is being coordinated, but not for the details of the coordination, which are the Contractor's responsibility. If the Architect determines that the coordination drawings are not being prepared in sufficient scope or detail, or are otherwise deficient, the Architect will so inform the Contractor, who shall make changes as directed and resubmit.

10. Coordination Drawing Prints: Prepare coordination drawing prints in accordance with requirements of Division 01 Section "Submittal Procedures."

1.05 KEY PERSONNEL

A. Key Personnel Names: Within 15 days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home, office, and cellular telephone numbers and email addresses. Provide names, addresses, and telephone numbers of individuals assigned as standbys in the absence of individuals assigned to Project.

   1. Post copies of list in project meeting room, in temporary field office, and by each temporary telephone. Keep list current at all times.

1.06 REQUESTS FOR INFORMATION (RFIs)

A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.

   1. Architect will return RFIs submitted to Architect by other entities controlled by Contractor with no response.

   2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.

B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:

   1. Project name.
   2. Project number.
   3. Date.
   4. Name of Contractor.
   5. Name of Architect.
   6. RFI number, numbered sequentially.
   7. RFI subject.
   8. Specification Section number and title and related paragraphs, as appropriate.
   9. Drawing number and detail references, as appropriate.
   10. Field dimensions and conditions, as appropriate.
11. Contractor’s suggested resolution. If Contractor’s solution(s) impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.

12. Contractor’s signature.

13. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.
   a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.

C. RFI Forms: AIA Document G716 or Software-generated form with substantially the same content as indicated above, acceptable to Owner and Architect.

D. Architect’s Action: Architect will review each RFI, determine action required, and respond. Allow seven working days for Architect’s response for each RFI. Allow ten working days if sub-consultant review is necessary. RFIs received by Architect after 1:00 p.m. will be considered as received the following working day.
   1. The following RFIs will be returned without action:
      a. Requests for approval of submittals.
      b. Requests for approval of substitutions.
      c. Requests for coordination information already indicated in the Contract Documents.
      d. Requests for adjustments in the Contract Time or the Contract Sum.
      e. Requests for interpretation of Architect’s actions on submittals.
      f. Incomplete RFIs or inaccurately prepared RFIs.
   2. Architect’s action may include a request for additional information, in which case Architect’s time for response will date from time of receipt of additional information.
   3. Architect’s action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Division 01 Section "Contract Modification Procedures."
      a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within 10 days of receipt of the RFI response.

E. On receipt of Architect’s action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within five days if Contractor disagrees with response.

F. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly. Use CSI Log Form 13.2B or form acceptable to Owner and Architect. Include the following:
   1. Project name.
   2. Name and address of Contractor.
   3. Name and address of Architect.
   4. RFI number including RFIs that were dropped and not submitted.
   5. RFI description.
   6. Date the RFI was submitted.
   7. Date Architect’s response was received.
8. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.

1.07 PROJECT MEETINGS

A. General: Schedule and conduct meetings and conferences at Project site, unless otherwise indicated.
   1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.
   2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
   3. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within three days of the meeting.

B. Preconstruction Conference: Schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 15 days after execution of the Agreement.
   1. Conduct the conference to review responsibilities and personnel assignments.
   2. Attendees: Authorized representatives of Owner, Owner’s Commissioning Authority, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
   3. Agenda: Discuss items of significance that could affect progress, including the following:
      a. Tentative construction schedule.
      b. Phasing.
      c. Critical work sequencing and long-lead items.
      d. Designation of key personnel and their duties.
      e. Lines of communications.
      f. Procedures for processing field decisions and Change Orders.
      g. Procedures for RFIs.
      h. Procedures for testing and inspecting.
      i. Procedures for processing Applications for Payment.
      j. Project phasing.
      k. Submittal procedures.
      l. Sustainable design requirements.
      m. Commissioning Plan and commissioning requirements.
      n. Preparation of record documents.
      o. Use of the premises.
      p. Work restrictions.
      q. Working hours.
      r. Owner’s occupancy requirements.
      s. Responsibility for temporary facilities and controls, including Erosion and Sedimentation Control Plan and Indoor Air Quality Management Plans.
      t. Procedures for moisture and mold control.
u. Procedures for disruptions and shutdowns.
v. Construction waste management and recycling.
w. Parking availability.
x. Office, work, and storage areas.
y. Equipment deliveries and priorities.
z. First aid.
bb. Progress cleaning.

4. Minutes: Contractor responsible for conducting meeting will record and distribute meeting minutes.

C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity that requires coordination with other construction.

1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect, and Owner's Commissioning Authority, of scheduled meeting dates.

2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
   b. Options.
   c. Related RFIs.
   d. Related Change Orders.
   e. Purchases.
   f. Deliveries.
   g. Submittals.
   h. Review of mockups.
   i. Possible conflicts.
   j. Compatibility problems.
   k. Time schedules.
   l. Weather limitations.
   m. Manufacturer's written recommendations.
   n. Warranty requirements.
   o. Compatibility of materials.
   p. Acceptability of substrates.
   q. Temporary facilities and controls.
   r. Space and access limitations.
   s. Regulations of authorities having jurisdiction.
   t. Testing and inspecting requirements.
   u. Installation procedures.
   v. Coordination with other work.
   w. Required performance results.
   x. Protection of adjacent work.
   y. Protection of construction and personnel.

3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
4. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.
5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

D. Project Closeout Conference: Schedule and conduct a Project closeout conference, at a time convenient to Owner and Architect, but no later than 90 days prior to the scheduled date of Substantial Completion.
1. Conduct the conference to review requirements and responsibilities related to Project closeout.
2. Attendees: Authorized representatives of Owner, Owner’s Commissioning Authority, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
3. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:
   a. Preparation of record documents.
   b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
   c. Submittal of written warranties.
   d. Requirements for preparing sustainable design documentation.
   e. Requirements for preparing operations and maintenance data.
   f. Requirements for demonstration and training.
   g. Preparation of Contractor's punch list.
   h. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
   i. Submittal procedures.
   j. Owner’s partial occupancy requirements.
   k. Installation of Owner’s furniture, fixtures, and equipment.
   l. Responsibility for removing temporary facilities and controls.

4. Minutes: Contractor conducting meeting will record and distribute meeting minutes.

E. Progress (OAC) Meetings: Conduct progress meetings at weekly intervals.
1. Coordinate dates of meetings with preparation of payment requests.
2. Shop drawings to be distributed.
3. Attendees: In addition to representatives of Owner, Owner’s Commissioning Authority and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
4. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
   a. Contractor’s Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind
schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

1) Review schedule for next period.

b. Review present and future needs of each entity present, including the following:
   1) Interface requirements.
   2) Sequence of operations.
   3) Status of submittals.
   4) Deliveries.
   5) Off-site fabrication.
   6) Access.
   7) Site utilization.
   8) Temporary facilities and controls.
   9) Progress cleaning.
   10) Quality and work standards.
   11) Status of correction of deficient items.
   12) Field observations.
   13) Status of RFIs.
   14) Status of proposal requests.
   15) Pending changes.
   16) Status of Change Orders.
   17) Pending claims and disputes.
   18) Documentation of information for payment requests.

5. Minutes: Contractor responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.
   a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

F. Coordination Meetings: Conduct Project coordination meetings the same day as progress meetings. Project coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and preinstallation conferences.
   1. Attendees: In addition to representatives of Owner, Owner's Commissioning Authority and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meetings shall be familiar with Project and authorized to conclude matters relating to the Work.
   2. Agenda: Review and correct or approve minutes of the previous coordination meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
   a. Combined Contractor's Construction Schedule: Review progress since the last coordination meeting. Determine whether each contract is on time, ahead of schedule, or behind schedule, in relation to combined Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure
commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

b. Schedule Updating: Revise combined Contractor's construction schedule after each coordination meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with report of each meeting.

c. Review present and future needs of each contractor present, including the following:
   1) Interface requirements.
   2) Sequence of operations.
   3) Status of submittals.
   4) Deliveries.
   5) Off-site fabrication.
   6) Access.
   7) Site utilization.
   8) Temporary facilities and controls.
   9) Work hours.
   10) Hazards and risks.
   11) Progress cleaning.
   12) Quality and work standards.
   13) Change Orders.

3. Reporting: Record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION
SECTION 01 32 00

CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
   1. Start-up construction schedule.
   2. Contractor's construction schedule.
   3. Daily construction reports.
   4. Material location reports.
   5. Field condition reports.
   6. Special reports.

B. Related Sections:
   1. Division 01 Section "Submittal Procedures" for submitting schedules and reports.
   2. Division 01 Section "Quality Requirements" for submitting a schedule of tests and inspections.
   3. Division 01 Section “Sustainable Design Requirements” for LEED specific submittals and documentation.
   4. Division 31 Section “Temporary Erosion and Sedimentation Control” for photographic documentation of erosion and sedimentation control measures.

1.02 DEFINITIONS

A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.
   1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.
   2. Predecessor Activity: An activity that precedes another activity in the network.
   3. Successor Activity: An activity that follows another activity in the network.

B. Cost Loading: The allocation of the schedule of values for the completion of an activity as scheduled. The sum of costs for all activities must equal the total Contract Sum, unless otherwise approved by Architect.

C. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of the Project.

D. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.

E. Event: The starting or ending point of an activity.
F. **Float**: The measure of leeway in starting and completing an activity.
   1. Float time is not for the exclusive use or benefit of either Owner or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.
   2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.
   3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.

G. **Resource Loading**: The allocation of manpower and equipment necessary for the completion of an activity as scheduled.

1.03 **INFORMATIONAL SUBMITTALS**

A. **Format for Submittals**: Submit required submittals in the following format:
   1. PDF electronic file.
   2. Three paper copies.

B. **Start-up construction schedule**.
   1. Approval of cost-loaded start-up construction schedule will not constitute approval of schedule of values for cost-loaded activities.

C. **Start-up Network Diagram**: Of size required to display entire network for entire construction period. Show logic ties for activities.

D. **Contractor’s Construction Schedule**: Initial schedule, of size required to display entire schedule for entire construction period.
   1. Submit a working electronic copy of schedule, using software indicated, and labeled to comply with requirements for submittals. Include type of schedule (initial or updated) and date on label.

E. **CPM Reports**: Concurrent with CPM schedule, submit each of the following reports. Format for each activity in reports shall contain activity number, activity description, cost and resource loading, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float in calendar days.
   1. **Activity Report**: List of all activities sorted by activity number and then early start date, or actual start date if known.
   2. **Logic Report**: List of preceding and succeeding activities for all activities, sorted in ascending order by activity number and then early start date, or actual start date if known.
   3. **Total Float Report**: List of all activities sorted in ascending order of total float.
   4. **Earnings Report**: Compilation of Contractor’s total earnings from the Notice to Proceed until most recent Application for Payment.

F. **Daily Construction Reports**: Submit at monthly intervals, coincidental with Application for Payment.

G. **Material Location Reports**: Submit at monthly intervals, coincidental with Application for Payment.
H. Field Condition Reports: Submit at time of discovery of differing conditions.

I. Special Reports: Submit at time of unusual event.

J. Sustainability Reports:
3. LEED Action Plans and Progress Reports for Credits MR 2.1, 2.2, 4.1, 4.2, 5.1, 5.2, 7 and EQ 4.1-4.4.
4. LEED Project Documentation for Credits SS P1, EA P1, C5, MR C2.1, 2.2, 4.1, 4.2, 5.1, 5.2, 7 and Credits EQ C3.1, 3.2, 4.1-4.4, and 5.

1.04 QUALITY ASSURANCE

A. Prescheduling Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to the preliminary construction schedule and Contractor's construction schedule, including, but not limited to, the following:
1. Review software limitations and content and format for reports.
2. Verify availability of qualified personnel needed to develop and update schedule.
3. Discuss constraints, including phasing area separations, interim milestones, and partial Owner occupancy.
4. Review delivery dates for Owner-furnished products.
5. Review time required for review of submittals and resubmittals.
6. Review requirements for tests and inspections by independent testing and inspecting agencies.
7. Review time required for completion and startup procedures.
8. Review and finalize list of construction activities to be included in schedule.
9. Review submittal requirements and procedures.
10. Review procedures for updating schedule.

1.05 COORDINATION

A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.

B. Coordinate Contractor's construction schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests, and other required schedules and reports.
1. Secure time commitments for performing critical elements of the Work from entities involved.
2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.
PART 2 - PRODUCTS

2.01 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

A. Time Frame: Extend schedule from date established for the Notice of Award to date of final completion.
   1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

B. Activities: Treat each story or separate area as a separate numbered activity for each principal element of the Work. Comply with the following:
   1. Activity Duration: Define activities so no activity is longer than 20 days, unless specifically allowed by Architect.
   2. Procurement Activities: Include procurement process activities for the following long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
      a. Elevators.
      b. HVAC equipment.
      c. Engine generators.
   3. Submittal Review Time: Include review and resubmittal times indicated in Division 01 Section "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's construction schedule with submittal schedule.
   4. Startup and Testing Time: Include not less than 15 days for startup and testing.
   5. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.
   6. Punch List and Final Completion: Include not more than 21 days for punch list and final completion.

C. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
   1. Phasing: Arrange list of activities on schedule by phase.
   2. Products Ordered in Advance: Include a separate activity for each product. Include delivery date indicated in Division 01 Section "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
   3. Owner-Furnished Products: Include a separate activity for each product. Include delivery date indicated in Division 01 Section "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
   4. Work Restrictions: Show the effect of the following items on the schedule:
      a. Coordination with existing construction.
      b. Limitations of continued occupancies.
      c. Uninterruptible services.
      d. Partial occupancy before Substantial Completion.
      e. Use of premises restrictions.
g. Seasonal variations.
h. Environmental control.

5. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:
   a. Subcontract awards.
   b. Submittals.
   c. Purchases.
   d. Mockups.
   e. Fabrication.
   f. Sample testing.
   g. Deliveries.
   h. Installation.
   i. Tests and inspections.
   j. Adjusting.
   k. Curing.
   l. Startup and placement into final use and operation.

6. Construction Areas: Identify each major area of construction for each major portion of the Work. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities to provide for the following:
   a. Structural completion.
   b. Permanent space enclosure.
   c. Completion of mechanical installation.
   d. Completion of electrical installation.
   e. Substantial Completion.

D. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and final completion.

E. Cost Correlation: At the head of schedule, provide a cost correlation line, indicating planned and actual costs. On the line, show dollar volume of the Work performed as of dates used for preparation of payment requests.
   1. Refer to Division 01 Section "Payment Procedures" for cost reporting and payment procedures.

F. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:
   1. Unresolved issues.
   2. Unanswered RFIs.
   3. Rejected or unreturned submittals.
   4. Notations on returned submittals.
G. Recovery Schedule: When periodic update indicates the Work is 14 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, and equipment required to achieve compliance, and date by which recovery will be accomplished.

H. Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.

2.02 START-UP CONSTRUCTION SCHEDULE

A. Bar-Chart Schedule: Submit start-up horizontal bar-chart-type construction schedule within seven days of date established for the Notice to Proceed.

B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line. Outline significant construction activities for first 90 days of construction. Include skeleton diagram for the remainder of the Work.

2.03 CONTRACTOR'S CONSTRUCTION SCHEDULE (CPM SCHEDULE)

A. General: Prepare network diagrams using AON (activity-on-node) format.

B. Start-up Network Diagram: Submit diagram within 14 days of date established for the Notice to Proceed. Outline significant construction activities for the first 90 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

C. CPM Schedule: Prepare Contractor's construction schedule using a cost- and resource-loaded, time-scaled CPM network analysis diagram for the Work.
   1. Develop network diagram in sufficient time to submit CPM schedule so it can be accepted for use no later than 60 days after date established for the Notice to Proceed.
      a. Failure to include any work item required for performance of this Contract shall not excuse Contractor from completing all work within applicable completion dates, regardless of Architect's approval of the schedule.
   2. Conduct educational workshops to train and inform key Project personnel, including subcontractors' personnel, in proper methods of providing data and using CPM schedule information.
   3. Establish procedures for monitoring and updating CPM schedule and for reporting progress. Coordinate procedures with progress meeting and payment request dates.
   4. Use "one workday" as the unit of time for individual activities. Indicate nonworking days and holidays incorporated into the schedule in order to correlate with Contract Time.
D. CPM Schedule Preparation: Prepare a list of all activities required to complete the Work. Using the start-up network diagram, prepare a skeleton network to identify probable critical paths.
   1. Activities: Indicate the estimated time duration, sequence requirements, and relationship of each activity in relation to other activities. Include estimated time frames for the following activities:
      a. Preparation and processing of submittals.
      b. Mobilization and demobilization.
      c. Purchase of materials.
      d. Delivery.
      e. Fabrication.
      f. Utility interruptions.
      g. Installation.
      h. Work by Owner that may affect or be affected by Contractor's activities.
      i. Testing and commissioning.
      j. Punch list and final completion.
      k. Activities occurring following final completion.

   2. Critical Path Activities: Identify critical path activities, including those for interim completion dates. Scheduled start and completion dates shall be consistent with Contract milestone dates.

   3. Processing: Process data to produce output data on a computer-drawn, time-scaled network. Revise data, reorganize activity sequences, and reproduce as often as necessary to produce the CPM schedule within the limitations of the Contract Time.

   4. Format: Mark the critical path. Locate the critical path near center of network; locate paths with most float near the edges.
      a. Subnetworks on separate sheets are permissible for activities clearly off the critical path.

   5. Cost- and Resource-Loading of CPM Schedule: Assign cost to construction activities on the CPM schedule. Do not assign costs to submittal activities. Obtain Architect's approval prior to assigning costs to fabrication and delivery activities. Assign costs under principal subcontracts for testing and commissioning activities, operation and maintenance manuals, punch list activities, Project record documents, LEED documentation, and demonstration and training (if applicable), in the amount of 5 percent of the Contract Sum.
      a. Each activity cost shall reflect an appropriate value subject to approval by Architect.
      b. Total cost assigned to activities shall equal the total Contract Sum.

E. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using a network fragment to demonstrate the effect of the proposed change on the overall project schedule.
F. Initial Issue of Schedule: Prepare initial network diagram from a sorted activity list indicating straight "early start-total float." Identify critical activities. Prepare tabulated reports showing the following:
1. Contractor or subcontractor and the Work or activity.
2. Description of activity.
3. Principal events of activity.
4. Immediate preceding and succeeding activities.
5. Early and late start dates.
6. Early and late finish dates.
7. Activity duration in workdays.
8. Total float or slack time.
10. Dollar value of activity (coordinated with the schedule of values).

G. Schedule Updating: Concurrent with making revisions to schedule, prepare tabulated reports showing the following:
1. Identification of activities that have changed.
2. Changes in early and late start dates.
3. Changes in early and late finish dates.
5. Changes in the critical path.
6. Changes in total float or slack time.

H. Value Summaries: Prepare two cumulative value lists, sorted by finish dates.
1. In first list, tabulate activity number, early finish date, dollar value, and cumulative dollar value.
2. In second list, tabulate activity number, late finish date, dollar value, and cumulative dollar value.
3. In subsequent issues of both lists, substitute actual finish dates for activities completed as of list date.
4. Prepare list for ease of comparison with payment requests; coordinate timing with progress meetings.
   a. In both value summary lists, tabulate "actual percent complete" and "cumulative value completed" with total at bottom.
   b. Submit value summary printouts one week before each regularly scheduled progress meeting.
2.04 REPORTS

A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
1. List of subcontractors at Project site.
2. Approximate count of personnel at Project site.
3. Equipment at Project site.
5. High and low temperatures and general weather conditions, including presence of rain or snow.
6. Accidents.
7. Meetings and significant decisions.
8. Unusual events (refer to special reports).
9. Stoppages, delays, shortages, and losses.
10. Meter readings and similar recordings.
11. Emergency procedures.
12. Orders and requests of authorities having jurisdiction.
13. Change Orders received and implemented.
14. Construction Change Directives received and implemented.
15. Services connected and disconnected.
16. Equipment or system tests and startups.
17. Partial completions and occupancies.
18. Substantial Completions authorized.

B. Material Location Reports: At monthly intervals to coincide with Applications for Payment, prepare and submit a comprehensive list of materials delivered to and stored at Project site. List shall be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site.

C. Field Condition Reports: Immediately on discovery of a difference between field conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

2.05 SPECIAL REPORTS

A. General: Submit special reports directly to Owner within one day of an occurrence. Distribute copies of report to parties affected by the occurrence.

B. Reporting Unusual Events: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, response by Contractor’s personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.
PART 3 - EXECUTION

3.01 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each scheduled date of Application for Payment.
   1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
   2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
   3. As the Work progresses, indicate final completion percentage for each activity.

B. Distribution: Distribute copies of approved schedule to Architect, Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.
   1. Post copies in Project meeting rooms and temporary field offices.
   2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

END OF SECTION
SECTION 01 32 33

PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes administrative and procedural requirements for the following:
   1. Preconstruction photographs.
   2. Periodic construction photographs.
   3. Photographic documentation for LEED requirements.
   4. Final completion construction photographs.

B. Related Sections:
   1. Division 01 Section "Unit Prices" for procedures for unit prices for extra photographs.
   2. Division 01 Section "Submittal Procedures" for submitting photographic documentation.
   3. Division 01 Section "Closeout Procedures" for submitting photographic documentation as project record documents at Project closeout.
   4. Division 01 Section "Demonstration and Training" for submitting video recordings of demonstration of equipment and training of Owner's personnel.
   5. Division 02 Section "Selective Structure Demolition" for photographic documentation before selective demolition operations commence.
   6. Division 01 Section “Construction Indoor Air Quality Management” for photographic documentation of LEED requirements.
   7. Division 31 Section "Site Clearing" for photographic documentation before site clearing operations commence.

1.02 INFORMATIONAL SUBMITTALS

A. Key Plan: Submit key plan of Project site and building with notation of vantage points marked for location and direction of each photograph. Indicate elevation or story of construction. Include same information as corresponding photographic documentation.

B. Digital Photographs: Submit image files within three days of taking photographs.
   1. Digital Camera: Minimum sensor resolution of 8 megapixels.
   2. Format: Minimum 1600 by 1200 pixels, 400 dpi minimum, in unaltered original files, with same aspect ratio as the sensor, uncropped, date- and time- stamped, in folder named by date of photograph, accompanied by key plan file.
   3. Identification: Provide the following information with each image description in file metadata tag:
      a. Name of Project.
      b. Name and contact information for photographer.
      c. Name of Architect.
      d. Name of Contractor.
      e. Date photograph was taken.
      f. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.
      g. Unique sequential identifier keyed to accompanying key plan.
1.03 QUALITY ASSURANCE

A. Photographer Qualifications: An individual who has been regularly engaged as a professional photographer of construction projects for not less than three years.

1.04 COORDINATION

A. Auxiliary Services: Cooperate with photographer and provide auxiliary services requested, including access to Project site and use of temporary facilities, including temporary lighting required to produce clear, well-lit photographs.

1.05 USAGE RIGHTS

A. Obtain and transfer copyright usage rights from photographer to Owner for unlimited reproduction of photographic documentation.

PART 2 - PRODUCTS

2.01 PHOTOGRAPHIC MEDIA

A. Digital Images: Provide images in JPG format, produced by a digital camera with minimum sensor size of 8 megapixels, and at an image resolution of not less than 1600 by 1200 pixels and 400 dpi.

PART 3 - EXECUTION

3.01 CONSTRUCTION PHOTOGRAPHS

A. General: Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs with blurry or out-of-focus areas will not be accepted.
   1. Maintain key plan with each set of construction photographs that identifies each photographic location.

B. Digital Images: Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.
   1. Date and Time: Include date and time in file name for each image.
   2. Field Office Images: Maintain one set of images accessible in the field office at Project site, available at all times for reference. Identify images in the same manner as those submitted to Architect.

C. Preconstruction Photographs: Before starting construction, take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by Architect.
   1. Flag construction limits before taking construction photographs.
   2. Take no less than 20 photographs to show existing conditions adjacent to property before starting the Work.
3. Take no less than 20 photographs of each existing building either on or adjoining property to accurately record physical conditions at start of construction.

4. Take additional photographs as required to record settlement or cracking of adjacent structures, pavements, and improvements.

D. Periodic Construction Photographs: Take no less than 20 photographs bi-weekly with the cutoff date associated with each Application for Payment. Select vantage points to show status of construction and progress since last photographs were taken.

E. Architect-Directed Construction Photographs: From time to time, Architect will instruct photographer about number and frequency of photographs and general directions on vantage points. Select actual vantage points and take photographs to show the status of construction and progress since last photographs were taken.

3.02 CONSTRUCTION VIDEO RECORDINGS

A. Video Recording Photographer: Engage a qualified videographer to record construction video recordings.

B. Recording: Mount camera on tripod before starting recording, unless otherwise necessary to show area of construction. Display continuous running time and date. At start of each video recording, record weather conditions from local newspaper or television and the actual temperature reading at Project site.

C. Narration: Describe scenes on video recording by audio narration by microphone while video recording is recorded. Include description of items being viewed, recent events, and planned activities. At each change in location, describe vantage point, location, direction (by compass point), and elevation or story of construction.
   1. Confirm date and time at beginning and end of recording.
   2. Begin each video recording with name of Project, Contractor's name, videographer's name, and Project location.

D. Transcript: Provide a typewritten transcript of the narration. Display images and running time captured from video recording opposite the corresponding narration segment.

E. Preconstruction Video Recording: Before starting demolition, make a video recording of Project site and surrounding properties from different vantage points, as directed by Architect.
   1. Flag construction limits before recording construction video recordings.
   2. Show existing conditions adjacent to Project site before starting the Work.
   3. Show existing buildings either on or adjoining Project site to accurately record physical conditions at the start of demolition.
   4. Show protection efforts by Contractor.
   5. Minimum recording time shall be 20 minutes.

END OF SECTION
SECTION 01 33 00

SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.

B. Related Sections:
   1. Division 01 Section "Payment Procedures" for submitting Applications for Payment and the schedule of values.
   2. Division 01 Section "Construction Progress Documentation" for submitting schedules and reports, including Contractor's construction schedule.
   3. Division 01 Section "Operation and Maintenance Data" for submitting operation and maintenance manuals.
   4. Division 01 Section "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.
   5. Division 01 Section "Demonstration and Training" for submitting video recordings of demonstration of equipment and training of Owner's personnel.

1.02 DEFINITIONS

A. Action Submittals: Written and graphic information and physical samples that require Architect's responsive action. Action submittals are those submittals indicated in individual Specification Sections as action submittals.

B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as informational submittals.

C. File Transfer Protocol (FTP): Communications protocol that enables transfer of files to and from another computer over a network and that serves as the basis for standard Internet protocols. An FTP site is a portion of a network located outside of network firewalls within which internal and external users are able to access files.

1.03 ACTION SUBMITTALS

A. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or modifications to submittals noted by the Architect and additional time for handling and reviewing submittals required by those corrections.

1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor’s construction schedule.

2. Initial Submittal: Submit concurrently with start-up construction schedule. Include submittals required during the first 60 days of construction. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.

3. Final Submittal: Submit concurrently with the first complete submittal of Contractor’s construction schedule.

   a. Submit revised submittal schedule to reflect changes in current status and timing for submittals.

4. Format: Arrange the following information in a tabular format:

   a. Scheduled date for first submittal.
   b. Specification Section number and title.
   c. Submittal category: Action, informational.
   d. Name of subcontractor.
   e. Description of the Work covered.
   f. Scheduled date for Architect’s final release or approval.
   g. Scheduled dates for purchasing.
   h. Scheduled dates for installation.
   i. Activity or event number.

1.04 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

A. Architect’s Digital Data Files: Electronic copies of CAD Drawings of the Contract Drawings will be provided by Architect for Contractor’s use in preparing submittals.


   a. Architect makes no representations as to the accuracy or completeness of digital data drawing files as they relate to the Contract Drawings.

   b. Contractor shall execute a data licensing agreement in the form of Agreement included in Project Manual.

B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.

2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.

4. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
   a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals, including color selection, until related submittals are received.

C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect’s receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
   1. Initial Review: Allow 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
   2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
   3. Resubmittal Review: Allow 15 days for review of each resubmittal.
   4. Sequential Review: Where sequential review of submittals by Architect’s consultants, Owner, or other parties is indicated, allow 21 days for initial review of each submittal.
   5. Concurrent Consultant Review: Where the Contract Documents indicate that submittals may be transmitted simultaneously to Architect and to Architect’s consultants, allow 15 days for review of each submittal. Submittal will be returned to Architect before being returned to Contractor.

D. Identification and Information: Place a permanent label or title block on each paper copy submittal item for identification.
   1. Indicate name of firm or entity that prepared each submittal on label or title block.
   2. Provide a space approximately 6 by 8 inches on label or beside title block to record Contractor’s review and approval markings and action taken by Architect.
   3. Include the following information for processing and recording action taken:
      a. Project name.
      b. Date.
      c. Name of Architect.
      d. Name of Contractor.
      e. Name of subcontractor.
      f. Name of supplier.
      g. Name of manufacturer.
      h. Submittal number or other unique identifier, including revision identifier.
         1) Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., 061000.01.A).
E. Identification and Information: Identify and incorporate information in each electronic submittal file as follows:
   1. Assemble complete submittal package into a single indexed file with links enabling navigation to each item.
   2. Name file with submittal number or other unique identifier, including revision identifier.
      a. File name shall use project identifier and Specification Section number followed by a decimal point and then a sequential number (e.g., LNHS-061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., LNHS-061000.01.A).
   3. Provide means for insertion to permanently record Contractor’s review and approval markings and action taken by Architect.
   4. Include the following information on an inserted cover sheet:
      a. Project name.
      b. Date.
      c. Name and address of Architect.
      d. Name of Construction Manager.
      e. Name of Contractor.
      f. Name of firm or entity that prepared submittal.
      g. Name of subcontractor.
      h. Name of supplier.
      i. Name of manufacturer.
      j. Number and title of appropriate Specification Section.
      k. Drawing number and detail references, as appropriate.
      l. Location(s) where product is to be installed, as appropriate.
      m. Related physical samples submitted directly.
      n. Other necessary identification.
   5. Include the following information as keywords in the electronic file metadata:
      a. Project name.
      b. Number and title of appropriate Specification Section.
      c. Manufacturer name.
      d. Product name.

F. Options: Identify options requiring selection by the Architect.

G. Deviations: Identify deviations from the Contract Documents on submittals.

H. Additional Paper Copies: Unless additional copies are required for final submittal, and unless Architect observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.
   1. Submit one copy of submittal to concurrent reviewer in addition to specified number of copies to Architect.
I. Transmittal: Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Architect will return submittals, without review, received from sources other than Contractor.

1. Transmittal Form: Use AIA Document G810 or form acceptable to Owner and Architect.

2. Transmittal Form: Provide locations on form for the following information:
   a. Project name.
   b. Date.
   c. Destination (To:).
   d. Source (From:).
   e. Names of subcontractor, manufacturer, and supplier.
   f. Category and type of submittal.
   g. Submittal purpose and description.
   h. Specification Section number and title.
   i. Indication of full or partial submittal.
   j. Drawing number and detail references, as appropriate.
   k. Transmittal number, numbered consecutively.
   l. Submittal and transmittal distribution record.
   m. Remarks.
   n. Signature of transmitter.

3. On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Architect on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same identification information as related submittal.

J. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.

1. Note date and content of previous submittal.

2. Note date and content of revision in label or title block and clearly indicate extent of revision.

3. Resubmit submittals until they are marked with approval notation from Architect's action stamp.

K. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

L. Use for Construction: Use only final submittals that are marked with approval notation from Architect's action stamp.
PART 2 - PRODUCTS

2.01 SUBMITTAL PROCEDURES

A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.

1. Submit electronic submittals via email as PDF electronic files.

2. Action Submittals: Submit five paper copies of each submittal, unless otherwise indicated. Architect will return two copies.

3. Informational Submittals: Submit one electronic copy of each submittal, unless otherwise indicated. Architect will not return copies.

4. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Division 01 Section "Closeout Procedures."

5. Certificates and Certifications Submittals: Provide a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
   a. Provide a digital signature with digital certificate on electronically-submitted certificates and certifications where indicated.
   b. Provide a notarized statement on original paper copy certificates and certifications where indicated.

6. Test and Inspection Reports Submittals: Comply with requirements specified in Division 01 Section "Quality Requirements."

B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.

2. Mark each copy of each submittal to show which products and options are applicable.

3. Include the following information, as applicable:
   a. Manufacturer's catalog cuts.
   b. Manufacturer's product specifications.
   c. Standard color charts.
   d. Statement of compliance with specified referenced standards.
   e. Testing by recognized testing agency.
   f. Application of testing agency labels and seals.
   g. Notation of coordination requirements.
   h. Availability and delivery time information.
4. For equipment, include the following in addition to the above, as applicable:
   a. Wiring diagrams showing factory-installed wiring.
   b. Printed performance curves.
   c. Operational range diagrams.
   d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.

5. Submit Product Data before or concurrent with Samples.

6. Submit Product Data in the following format:
   a. PDF electronic file.
   b. Five paper copies of Product Data, unless otherwise indicated. Architect will return two copies.

C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data, unless submittal based upon Architect’s digital data drawing files is otherwise permitted.
   1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
      a. Identification of products.
      b. Schedules.
      c. Compliance with specified standards.
      d. Notation of coordination requirements.
      e. Notation of dimensions established by field measurement.
      f. Relationship and attachment to adjoining construction clearly indicated.
      g. Seal and signature of professional engineer if specified.

   2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches but no larger than 30 by 42 inches.

   3. Submit Shop Drawings in the following format:
      a. PDF electronic file.
      b. Five opaque (bond) copies of each submittal. Architect will return two copies.

D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
   1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.

   2. Identification: Attach label on unexposed side of Samples that includes the following:
      a. Generic description of Sample.
      b. Product name and name of manufacturer.
      c. Sample source.
      d. Number and title of applicable Specification Section.
3. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
   a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
   b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.

4. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
   a. Number of Samples: Submit three full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.

5. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
   a. Number of Samples: Submit three sets of Samples. Architect will retain two Sample sets; remainder will be returned. Mark up and retain one returned Sample set as a Project record sample.
      1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
      2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.

E. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
   1. Type of product. Include unique identifier for each product.
   2. Manufacturer and product name, and model number if applicable.
   3. Number and name of room or space.
   4. Location within room or space.
   5. Submit product schedule in the following format:
      a. PDF electronic file.
      b. Three paper copies of product schedule or list, unless otherwise indicated. Architect will return one copy.

F. Contractor's Construction Schedule: Comply with requirements specified in Division 01 Section "Construction Progress Documentation."
G. Application for Payment: Comply with requirements specified in Division 01 Section "Payment Procedures."

H. Schedule of Values: Comply with requirements specified in Division 01 Section "Payment Procedures."

I. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:
   1. Name, address, and telephone number of entity performing subcontract or supplying products.
   2. Number and title of related Specification Section(s) covered by subcontract.
   3. Drawing number and detail references, as appropriate, covered by subcontract.
   4. Submit subcontract list in the following format:
      a. PDF electronic file.
      b. Number of Copies: Three paper copies of subcontractor list, unless otherwise indicated. Architect will return one copy.

J. LEED Submittals: Comply with requirements specified in Division 01 Section "Sustainable Design Requirements."
   1. Submit LEED submittals in the following format:
      a. PDF electronic file.
      b. Three paper copies of LEED submittals, unless otherwise indicated.

K. Coordination Drawings: Comply with requirements specified in Division 01 Section "Project Management and Coordination."

L. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.


N. Installer Certificates: Submit written statements on manufacturer’s letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.

O. Manufacturer Certificates: Submit written statements on manufacturer’s letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.

P. Product Certificates: Submit written statements on manufacturer’s letterhead certifying that product complies with requirements in the Contract Documents.

Q. Material Certificates: Submit written statements on manufacturer’s letterhead certifying that material complies with requirements in the Contract Documents.
R. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.

S. Product Test Reports: Submit written reports indicating current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

T. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
   1. Name of evaluation organization.
   2. Date of evaluation.
   3. Time period when report is in effect.
   4. Product and manufacturers' names.
   5. Description of product.
   6. Test procedures and results.
   7. Limitations of use.

U. Schedule of Tests and Inspections: Comply with requirements specified in Division 01 Section "Quality Requirements."

V. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.

W. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

X. Field Test Reports: Submit reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

Y. Maintenance Data: Comply with requirements specified in Division 01 Section "Operation and Maintenance Data."

Z. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.
2.02  DELEGATED-DESIGN SERVICES

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.

B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally-signed PDF electronic file and three paper copies of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.
1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

PART 3 - EXECUTION

3.01  CONTRACTOR'S REVIEW

A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.

B. Project Closeout and Maintenance/Material Submittals: Refer to requirements in Division 01 Section "Closeout Procedures."

C. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.02  ARCHITECT'S ACTION

A. General: Architect will not review submittals that do not bear Contractor's approval stamp and will return them without action.

B. Action Submittals: Architect will review each submittal, make marks to indicate corrections or modifications required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action, as follows:
1. Submittals marked either "Approved" or "Make Corrections Noted" by the Architect means the submittal is approved (or approved as noted) to proceed with purchase, fabrication, or installation of submittal related work. Work which is executed without required prior review by the Architect shall be subject to rejection. Removal and reconstruction of rejected work shall be at the Contractor's expense.
2. Submittals marked “Make Corrections Noted” shall be considered as approved with the noted items to be corrected before fabrication or erection.
3. Submittals marked "Revise & Resubmit" shall be changed according to notes attached to the submittal and shall be resubmitted. Resubmit as required until marked as Approved by the Architect.
   a. If "Revise & Resubmit" is marked in conjunction with "Make Corrections Noted" the submittal shall be corrected to reflect needed changes and resubmitted as a record of installed products and/or materials. However, submittals so marked may proceed with manufacture, fabrication, and installation without further Architectural review.

4. Submittals marked "Rejected" are so identified to indicate that the item submitted for review is not a product or material approved for use in the project. Submittal of one of the approved products or materials is required.

C. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.

D. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Architect.

E. Incomplete submittals are not acceptable, will be considered nonresponsive, and will be returned without review.

F. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

END OF SECTION
SECTION 01 35 43
HAZARDOUS MATERIALS AND SAFETY REQUIREMENTS

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes:
   1. Applicable Publications.
   2. Regulations/Responsibility.
   7. Environmental Protection.
   8. This Section is applicable to all work covered by this Contract.

B. Related Sections
   1. Division 01 Section “Available Project Information.”
   2. Division 01 Section “Summary.”
   3. Division 01 Section “Administrative Requirements.”
   4. Division 01 Section “Contract Closeout Procedures.”

1.02 DEFINITIONS

A. Hazardous Material: Refer to hazardous and toxic materials/substances included in Subparts H and Z of 29 CFR 1910; and 40 CFR, Part 261. Those most commonly encountered include: asbestos, polychlorinated biphenyls (PCBs), explosives, and radioactive material, but may include others. The most likely products to contain asbestos are sprayed-on fireproofing, insulation, boiler lagging, pipe covering and likely products to contain PCBs are transformers, capacitors, voltage regulators, HVAC insulation, and oil switches, etc.

1.03 REFERENCES

A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

   5. EPA Asbestos (40 CFR, Part 763, including Subpart E, Appendix C).
1.04 REGULATIONS RESPONSIBILITY

A. Compliance with Regulations: All work, including contact with the handling of hazardous materials, the disturbance or dismantling of structures containing hazardous materials and/or the disposal of hazardous materials shall comply with the applicable requirements of 29 CFR 1926/1910 and/or the applicable part(s) of 40 CFR. Work involving the disturbance, dismantling of asbestos or asbestos containing materials; the demolition of structures containing asbestos; and/or the disposal and removal of asbestos, shall also comply with the requirements of 40 CFR, Part 763. All work shall comply with applicable state and municipal safety and health requirements. Where there is a conflict between applicable regulations, the more stringent shall apply.

B. Contractor's Responsibility: The Contractor shall assume full responsibility and liability for compliance with all applicable codes, standards and regulations pertaining to the health and safety of personnel during the execution of work and shall hold the Owner and the Architect harmless for any action on his/her part or that of his/her employees or subcontractors, which results in illness, injury or death.

1.05 SUBMITTALS

A. See Division 01 Section - Administrative Requirements for submittal procedures.

B. Background: OSHA (29 CFR 1910 and/or 29 CFR 1926) require(s) the Contractor to have written safety and health programs in effect. Examples of these programs include, but are not limited to:
2. Powered Platforms.
6. Respiratory Protection.
9. Fall Protection.
13. Lead.
15. Respiratory Protection.
16. Permit Required Confined Space.

C. Material Safety Data Sheets (MSDS):
1. Copies of all material safety data sheets for all applicable products, including but not limited to; paint, adhesives, mastics, solvents, and finishes, etc., shall be retained on site by the Contractor for all applicable products used during the construction work. Furnish copies of all MSDC's to the Owner and Architect and include with closeout submittals.
1.06 PROJECT/SITE CONDITIONS

A. Hazard Communication Requirements
   1. All Contractors are responsible for compliance with mandatory federal rules and regulations concerning Hazard Communication, specifically those regulations contained in 29 CFR 1910.1200 Hazard Communication.
   2. Contractor and all subcontractors working at sites under the control of the Owner shall make available to the Architect, upon request, copies of the Hazard Communication Program used by their firm. In addition to this requirement, all regulations related to Multi-employer workplaces shall be adhered to. These regulations are found in 29 CFR 1910.1200, (e) (2) (I) through (e) (4).

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. Special facility, devices, equipment, clothing and similar items used by the Contractor in the execution of work shall comply with 29 CFR 1910, Subpart "I"-Personal Protective Equipment.

PART 3 - EXECUTION

3.01 EXAMINATION

A. The Owner has completed Environmental Site Assessments as described in Division 01 Section “Available Project Information” and hazardous materials will be abated before the commencement of this contract, however, he Contractor is cautioned to be alert to the possibility that his work may uncover hazardous materials.

B. In the event that the Contractor encounters any material on the site which is reasonably believed hazardous, which has not been rendered harmless, the Contractor shall:
   1. Stop work immediately in affected areas.
   2. Report the condition in writing to the Owner.
   3. Report the condition in writing to the Architect.

C. If the suspected materials prove to contain hazards, the Owner will arrange to have the materials abated or removed in a timely manner.

D. Resume work only after materials have been completely abated or removed.

3.02 PROTECTION OF PERSONNEL

A. The Contractor shall take all necessary precautions to prevent injury to the public, building occupants, or damage to property of others. For the purposes of this Contract, the public or building occupants shall include all persons not employed by the Contractor or a subcontractor working under his/her direction.
B. Wherever practical, the work area shall be fenced, barricaded or otherwise blocked off from the public or building occupants to prevent unauthorized entry into the work area. Provide traffic barricades and traffic control signage where construction activities occur in parking areas or drives.

3.03 ENVIRONMENTAL PROTECTION

A. Solid, Liquid and Gaseous Contaminants: The Contractor shall be responsible for the proper disposal of all solid, liquid and gaseous contaminants in accordance with all local codes and regulations, together with the following requirements.

B. Noise Control:
   1. Comply with all applicable OSHA, state and local laws, ordinances and regulations relative to noise control.
   2. Contractor’s equipment noise levels shall not exceed those established by local ordinances.
   3. The Contractor's employees on the site shall not be exposed to noise level(s) exceeding the OSHA exposure limits in dBA. Comply with Noise Exposure - 29 CFR 1926.52 and/or Occupational Noise Exposure - 29 CFR 1910.95 as applicable.

END OF SECTION
SECTION 01 40 00
QUALITY REQUIREMENTS

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
   1. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
   2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
   3. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

C. Related Sections:
   1. Division 01 Section "Construction Progress Documentation" for developing a schedule of required tests and inspections.
   2. Division 01 Section “Commissioning” for system inspection and testing requirements,
   3. Divisions 02 through 49 Sections for specific test and inspection requirements.

1.02 DEFINITIONS

A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect.
C. **Mockups**: Full size physical assemblies that are constructed on-site. Mockups are constructed to verify selections made under sample submittals; to demonstrate aesthetic effects and, where indicated, qualities of materials and execution; to review coordination, testing, or operation; to show interface between dissimilar materials; and to demonstrate compliance with specified installation tolerances. Mockups are not Samples. Unless otherwise indicated, approved mockups establish the standard by which the Work will be judged.
   1. Laboratory Mockups: Full-size, physical assemblies constructed at testing facility to verify performance characteristics.
   2. Integrated Exterior Mockups: Mockups of the exterior envelope erected separately from the building but on the project site, consisting of multiple products, assemblies and subassemblies.
   3. Room Mockups: Mockups of typical interior spaces complete with wall, floor, and ceiling finishes, doors, windows, millwork, casework, specialties, furnishings and equipment, and lighting.

D. **Preconstruction Testing**: Tests and inspections performed specifically for the Project before products and materials are incorporated into the Work to verify performance or compliance with specified criteria.

E. **Product Testing**: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.

F. **Source Quality-Control Testing**: Tests and inspections that are performed at the source, i.e., plant, mill, factory, or shop.

G. **Field Quality-Control Testing**: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

H. **Testing Agency**: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

I. **Installer/Applicator/Erector**: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
   1. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade or trades.

J. **Experienced**: When used with an entity or individual, "experienced" means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.
1.03 CONFLICTING REQUIREMENTS

A. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Architect for a decision before proceeding.

B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.04 ACTION SUBMITTALS

A. Shop Drawings: For integrated exterior and laboratory mockups, provide plans, sections, and elevations, indicating materials and size of mockup construction.
   1. Indicate manufacturer and model number of individual components.
   2. Provide axonometric drawings for conditions difficult to illustrate in two dimensions.

1.05 INFORMATIONAL SUBMITTALS

A. Contractor's Quality-Control Plan: For quality-assurance and quality-control activities and responsibilities.

B. Contractor's Quality-Control Manager Qualifications: For supervisory personnel.

C. Contractor's Statement of Responsibility: When required by authorities having jurisdiction, submit copy of written statement of responsibility sent to authorities having jurisdiction before starting work on the following systems.
   1. Seismic-force resisting system, designated seismic system, or component listed in the designated seismic system quality assurance plan prepared by the Architect.
   2. Main wind-force resisting system or a wind-resisting component listed in the wind-force-resisting system quality assurance plan prepared by the Architect.

D. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

E. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
   1. Specification Section number and title.
   2. Entity responsible for performing tests and inspections.
   3. Description of test and inspection.
   4. Identification of applicable standards.
   5. Identification of test and inspection methods.
   6. Number of tests and inspections required.
   7. Time schedule or time span for tests and inspections.
8. Requirements for obtaining samples.
9. Unique characteristics of each quality-control service.

1.06 CONTRACTOR'S QUALITY-CONTROL PLAN

A. Quality-Control Plan, General: Submit quality-control plan within 10 days of Notice to Proceed, and not less than five days prior to preconstruction conference. Submit in format acceptable to Architect. Identify personnel, procedures, controls, instructions, tests, records, and forms to be used to carry out Contractor's quality-assurance and quality-control responsibilities. Coordinate with Contractor's construction schedule.

B. Quality-Control Personnel Qualifications: Engage qualified full-time personnel trained and experienced in managing and executing quality-assurance and quality-control procedures similar in nature and extent to those required for Project.
   1. Project quality-control manager may also serve as Project superintendent.

C. Submittal Procedure: Describe procedures for ensuring compliance with requirements through review and management of submittal process. Indicate qualifications of personnel responsible for submittal review.

D. Testing and Inspection: Include in quality-control plan a comprehensive schedule of Work requiring testing or inspection, including the following:
   1. Contractor-performed tests and inspections including subcontractor-performed tests and inspections. Include required tests and inspections and Contractor-elected tests and inspections.
   2. Special inspections required by authorities having jurisdiction and indicated on the "Statement of Special Inspections."
   3. Owner-performed tests and inspections indicated in the Contract Documents, including tests and inspections indicated to be performed by the Commissioning Authority.

E. Continuous Inspection of Workmanship: Describe process for continuous inspection during construction to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring work into compliance with standards of workmanship established by Contract requirements and approved mockups.

F. Monitoring and Documentation: Maintain testing and inspection reports including log of approved and rejected results. Include work Architect has indicated as nonconforming or defective. Indicate corrective actions taken to bring nonconforming work into compliance with requirements. Comply with requirements of authorities having jurisdiction.

1.07 REPORTS AND DOCUMENTS

A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:
   1. Date of issue.
   2. Project title and number.
   3. Name, address, and telephone number of testing agency.
   4. Dates and locations of samples and tests or inspections.
5. Names of individuals making tests and inspections.
6. Description of the Work and test and inspection method.
8. Complete test or inspection data.
9. Test and inspection results and an interpretation of test results.
10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
12. Name and signature of laboratory inspector.
13. Recommendations on retesting and reinspecting.

B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:
1. Name, address, and telephone number of technical representative making report.
2. Statement on condition of substrates and their acceptability for installation of product.
3. Statement that products at Project site comply with requirements.
4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
6. Statement as to whether conditions, products, and installation will affect warranty.
7. Other required items indicated in individual Specification Sections.

C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:
1. Name, address, and telephone number of factory-authorized service representative making report.
2. Statement that equipment complies with requirements.
3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
4. Statement as to whether conditions, products, and installation will affect warranty.
5. Other required items indicated in individual Specification Sections.

D. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.
QUALITY ASSURANCE

A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

D. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or products that are similar to those indicated for this Project in material, design, and extent.

F. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
   1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.

G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 329; and with additional qualifications specified in individual Sections; and where required by authorities having jurisdiction, that is acceptable to authorities.
   1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
   2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.

H. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

I. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
J. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:

1. Contractor responsibilities include the following:
   a. Provide test specimens representative of proposed products and construction.
   b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
   c. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.
   d. Build site-assembled test assemblies and mockups using installers who will perform same tasks for Project.
   e. Build laboratory mockups at testing facility using personnel, products, and methods of construction indicated for the completed Work.
   f. When testing is complete, remove test specimens, assemblies, mockups; do not reuse products on Project.

2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect, with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.

K. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:

1. Build mockups in location and of size indicated or, if not indicated, as directed by Architect.
2. Notify Architect seven days in advance of dates and times when mockups will be constructed.
3. Employ supervisory personnel who will oversee mockup construction. Employ workers that will be employed during the construction at the Project.
4. Demonstrate the proposed range of aesthetic effects and workmanship.
5. Obtain Architect’s approval of mockups before starting work, fabrication, or construction.
   a. Allow seven days for initial review and each re-review of each mockup.

6. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
7. Demolish and remove mockups when directed, unless otherwise indicated.

L. Integrated Exterior Mockups: Construct integrated exterior mockup as indicated below or as indicated on Drawings. Coordinate installation of exterior envelope materials and products for which mockups are required in individual specification sections, along with supporting materials.

1. See Division 03 Section “Decorative Concrete Floor Finish” for decorative concrete mock-up requirements.
M. Room Mockups: Construct room mockups as indicated, incorporating required materials and assemblies, finished in accordance with requirements. Provide required lighting and additional lighting where required to enable Architect to evaluate quality of the Work.

N. Paragraph below is usually limited to non-standard storefronts and curtain-wall systems to be tested for a Project.

O. Laboratory Mockups: Comply with requirements of preconstruction testing and those specified in individual Specification Sections in Divisions 02 through 49.

1.09 QUALITY CONTROL

A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
   1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
   2. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.

B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.
   1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
   2. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
      a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
   3. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
   4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
   5. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
   6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

C. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Division 01 Section "Submittal Procedures."

D. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and...
conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.

E. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.

   1. Notify Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
   2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
   3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
   4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
   5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
   6. Do not perform any duties of Contractor.

G. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
   1. Access to the Work.
   2. Incidental labor and facilities necessary to facilitate tests and inspections.
   3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
   4. Facilities for storage and field curing of test samples.
   5. Delivery of samples to testing agencies.
   6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
   7. Security and protection for samples and for testing and inspecting equipment at Project site.

H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
   1. Schedule times for tests, inspections, obtaining samples, and similar activities.

I. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents. Coordinate and submit concurrently with Contractor's construction schedule. Update as the Work progresses.
   1. Distribution: Distribute schedule to Owner, Architect, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.
1.10 SPECIAL TESTS AND INSPECTIONS

A. Special Tests and Inspections: Owner will engage a qualified testing agency or special inspector to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner, and as follows:
   1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviewing the completeness and adequacy of those procedures to perform the Work.
   2. Notifying Architect and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
   3. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect with copy to Contractor and to authorities having jurisdiction.
   4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
   5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
   6. Retesting and reinspecting corrected work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 TEST AND INSPECTION LOG

A. Prepare a record of tests and inspections. Include the following:
   1. Date test or inspection was conducted.
   2. Description of the Work tested or inspected.
   3. Date test or inspection results were transmitted to Architect.
   4. Identification of testing agency or special inspector conducting test or inspection.

B. Maintain log at Project site. Post changes and modifications as they occur. Provide access to test and inspection log for Architect's reference during normal working hours.

3.02 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
   1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Division 01 Section "Execution."

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION

QUALITY REQUIREMENTS
01 40 00 - 10
SECTION 01 42 00

REFERENCES

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes:
   1. Industry standards and acronyms.

1.02 INDUSTRY STANDARDS

A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

B. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.

C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.

   1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.

1.03 LEED REFERENCES

United States Green Building Council (USGBC)
1800 Massachusetts Ave, NW, Suite 300
Washington, DC 20036
202 828-7422
www.usgbc.org

A. See other Division 01 Sections for more LEED references.

1.04 ABBREVIATIONS AND ACRONYMS

A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in Thomson Gale's "Encyclopedia of Associations" or in Columbia Books' "National Trade & Professional Associations of the U.S."
### Industry Organizations

Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list.

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Name</th>
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<tbody>
<tr>
<td>AA</td>
<td>Aluminum Association, Inc. (The)</td>
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<tr>
<td>AAADM</td>
<td>American Association of Automatic Door Manufacturers</td>
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<tr>
<td>AABC</td>
<td>Associated Air Balance Council</td>
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<tr>
<td>AAMA</td>
<td>American Architectural Manufacturers Association</td>
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<tr>
<td>AASHTO</td>
<td>American Association of State Highway and Transportation Officials</td>
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<tr>
<td>AATCC</td>
<td>American Association of Textile Chemists and Colorists</td>
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<tr>
<td>ABAA</td>
<td>Air Barrier Association of America</td>
</tr>
<tr>
<td>ABMA</td>
<td>American Bearing Manufacturers Association</td>
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<tr>
<td>ACI</td>
<td>American Concrete Institute</td>
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<tr>
<td>ACPA</td>
<td>American Concrete Pipe Association</td>
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<tr>
<td>AEIC</td>
<td>Association of Edison Illuminating Companies, Inc. (The)</td>
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<tr>
<td>AF&amp;PA</td>
<td>American Forest &amp; Paper Association</td>
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<td>AGA</td>
<td>American Gas Association</td>
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<tr>
<td>AGC</td>
<td>Associated General Contractors of America (The)</td>
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<tr>
<td>AHA</td>
<td>American Hardboard Association (Now part of CPA)</td>
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<tr>
<td>AHAM</td>
<td>Association of Home Appliance Manufacturers</td>
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<td>AI</td>
<td>Asphalt Institute</td>
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<td>AIA</td>
<td>American Institute of Architects (The)</td>
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<td>AISC</td>
<td>American Institute of Steel Construction</td>
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<tr>
<td>AISI</td>
<td>American Iron and Steel Institute</td>
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<tr>
<td>AITC</td>
<td>American Institute of Timber Construction</td>
</tr>
<tr>
<td>ALCA</td>
<td>Associated Landscape Contractors of America (Now PLANET - Professional Landcare Network)</td>
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<tr>
<td>ALSC</td>
<td>American Lumber Standard Committee, Incorporated</td>
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<td>AMCA</td>
<td>Air Movement and Control Association International, Inc.</td>
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<tr>
<td>ANSI</td>
<td>American National Standards Institute</td>
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<tr>
<td>AOSA</td>
<td>Association of Official Seed Analysts, Inc.</td>
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<tr>
<td>APA</td>
<td>Architectural Precast Association</td>
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<tr>
<td>APA EWS</td>
<td>APA - The Engineered Wood Association; Engineered Wood Systems (See APA - The Engineered Wood Association)</td>
</tr>
<tr>
<td>API</td>
<td>American Petroleum Institute</td>
</tr>
<tr>
<td>ARI</td>
<td>Air-Conditioning &amp; Refrigeration Institute</td>
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</tbody>
</table>
ARMA Asphalt Roofing Manufacturers Association
ASCE American Society of Civil Engineers
ASCE/SEI American Society of Civil Engineers/Structural Engineering Institute
(See ASCE)
ASHRAE American Society of Heating, Refrigerating and Air-Conditioning Engineers
ASME ASME International
(American Society of Mechanical Engineers International)
ASSE American Society of Sanitary Engineering
ASTM ASTM International
(American Society for Testing and Materials International)
AWCI Association of the Wall and Ceiling Industry
AWCMA American Window Covering Manufacturers Association
(Now WCMA)
AWI Architectural Woodwork Institute
AWPA American Wood Protection Association
(Formerly: American Wood Preservers' Association)
AWS American Welding Society
AWWA American Water Works Association
BHMA Builders Hardware Manufacturers Association
BIA Brick Industry Association (The)
BIFMA BIFMA International
(Business and Institutional Furniture Manufacturer's Association International)
BISSC Baking Industry Sanitation Standards Committee
BWF Badminton World Federation
(Formerly: IBF - International Badminton Federation)
CCC Carpet Cushion Council
CDA Copper Development Association
CEA Canadian Electricity Association
CEA Consumer Electronics Association
CFFA Chemical Fabrics & Film Association, Inc.
CGA Compressed Gas Association
CIMA Cellulose Insulation Manufacturers Association
CISCA Ceilings & Interior Systems Construction Association
CISPI Cast Iron Soil Pipe Institute
CLFMI Chain Link Fence Manufacturers Institute
CRRC Cool Roof Rating Council
CPA Composite Panel Association
CPPA Corrugated Polyethylene Pipe Association

REFERENCES
01 42 00 - 3
CRI  Carpet and Rug Institute (The)
CRSI  Concrete Reinforcing Steel Institute
CSA  Canadian Standards Association
CSA  CSA International
   (Formerly: IAS - International Approval Services)
CSI  Cast Stone Institute
CSI  Construction Specifications Institute (The)
CSSB  Cedar Shake & Shingle Bureau
CTI  Cooling Technology Institute
   (Formerly: Cooling Tower Institute)
DHI  Door and Hardware Institute
EIA  Electronic Industries Alliance
EIMA  EIFS Industry Members Association
EJCDC  Engineers Joint Contract Documents Committee
EJMA  Expansion Joint Manufacturers Association, Inc.
ESD  ESD Association
   (Electrostatic Discharge Association)
ETL SEMCO  Intertek ETL SEMCO
   (Formerly: ITS - Intertek Testing Service NA)
FIBA  Federation Internationale de Basketball
   (The International Basketball Federation)
FIVB  Federation Internationale de Volleyball
   (The International Volleyball Federation)
FM  FM Approvals LLC
   Approvals
FM Global  FM Global
   (Formerly: FMG - FM Global)
FMRC  Factory Mutual Research
   (Now FM Global)
FRSA  Florida Roofing, Sheet Metal & Air Conditioning Contractors Association, Inc.
FSA  Fluid Sealing Association
FSC  Forest Stewardship Council
GA  Gypsum Association
GANA  Glass Association of North America
GRI  (Part of GSI)
GS  Green Seal
GSI  Geosynthetic Institute
HI  Hydraulic Institute
HI  Hydronics Institute
REFERENCES

HMMA Hollow Metal Manufacturers Association
   (Part of NAAMM)
HPVA Hardwood Plywood & Veneer Association
HPW H. P. White Laboratory, Inc.
IAS International Approval Services
   (Now CSA International)
IBF International Badminton Federation
   (Now BWF)
ICEA Insulated Cable Engineers Association, Inc.
ICRI International Concrete Repair Institute, Inc.
IEC International Electrotechnical Commission
IEEE Institute of Electrical and Electronics Engineers, Inc. (The)
IESNA Illuminating Engineering Society of North America
IEST Institute of Environmental Sciences and Technology
IGCC Insulating Glass Certification Council
IGMA Insulating Glass Manufacturers Alliance
ILI Indiana Limestone Institute of America, Inc.
ISO International Organization for Standardization
   Available from ANSI
ISSFA International Solid Surface Fabricators Association
ITS Intertek Testing Service NA
   (Now ETL SEMCO)
ITU International Telecommunication Union
KCMA Kitchen Cabinet Manufacturers Association
LPI Lightning Protection Institute
LMA Laminating Materials Association
   (Now part of CPA)
MBMA Metal Building Manufacturers Association
MFMA Maple Flooring Manufacturers Association, Inc.
MH Material Handling
   (Now MHIA)
MHIA Material Handling Industry of America
MIA Marble Institute of America
MPI Master Painters Institute
MSS Manufacturers Standardization Society of The Valve and Fittings Industry Inc.
NAAMM National Association of Architectural Metal Manufacturers
NACE NACE International
   (National Association of Corrosion Engineers International)
NADCA National Air Duct Cleaners Association
NAGWS  National Association for Girls and Women in Sport
NAIMA  North American Insulation Manufacturers Association
NBGQA  National Building Granite Quarries Association, Inc.
NCAA  National Collegiate Athletic Association (The)
NCMA  National Concrete Masonry Association
NCPI  National Clay Pipe Institute
NCTA  National Cable & Telecommunications Association
NEBB  National Environmental Balancing Bureau
NECA  National Electrical Contractors Association
NeLMA  Northeastern Lumber Manufacturers' Association
NEMA  National Electrical Manufacturers Association
NETA  InterNational Electrical Testing Association
NFHS  National Federation of State High School Associations
NFPA  NFPA
(National Fire Protection Association)
NFRC  National Fenestration Rating Council
NGA  National Glass Association
NHLA  National Hardwood Lumber Association
NLGA  National Lumber Grades Authority
NOFMA  NOFMA: The Wood Flooring Manufacturers Association
(Formerly: National Oak Flooring Manufacturers Association)
NOMMA  National Ornamental & Miscellaneous Metals Association
NRCA  National Roofing Contractors Association
NRMCA  National Ready Mixed Concrete Association
NSF  NSF International
(National Sanitation Foundation International)
NSSGA  National Stone, Sand & Gravel Association
NTMA  National Terrazzo & Mosaic Association, Inc. (The)
NTRMA  National Tile Roofing Manufacturers Association
(Now TRI)
NWWDA  National Wood Window and Door Association
(Now WDMA)
OPL  Omega Point Laboratories, Inc.
(Now ITS)
PCI  Precast/Prestressed Concrete Institute
PDCA  Painting & Decorating Contractors of America
PDI  Plumbing & Drainage Institute
PGI  PVC Geomembrane Institute
PLANET  Professional Landcare Network
(Formerly: ACLA - Associated Landscape Contractors of America)
<table>
<thead>
<tr>
<th>Code</th>
<th>Organization Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTI</td>
<td>Post-Tensioning Institute</td>
</tr>
<tr>
<td>RCSC</td>
<td>Research Council on Structural Connections</td>
</tr>
<tr>
<td>RFCI</td>
<td>Resilient Floor Covering Institute</td>
</tr>
<tr>
<td>RIS</td>
<td>Redwood Inspection Service</td>
</tr>
<tr>
<td>SAE</td>
<td>SAE International</td>
</tr>
<tr>
<td>SDI</td>
<td>Steel Deck Institute</td>
</tr>
<tr>
<td>SDI</td>
<td>Steel Door Institute</td>
</tr>
<tr>
<td>SEFA</td>
<td>Scientific Equipment and Furniture Association</td>
</tr>
<tr>
<td>SEI/ASCE</td>
<td>Structural Engineering Institute/American Society of Civil Engineers (See ASCE)</td>
</tr>
<tr>
<td>SGCC</td>
<td>Safety Glazing Certification Council</td>
</tr>
<tr>
<td>SIA</td>
<td>Security Industry Association</td>
</tr>
<tr>
<td>SIGMA</td>
<td>Sealed Insulating Glass Manufacturers Association (Now IGMA)</td>
</tr>
<tr>
<td>SJI</td>
<td>Steel Joist Institute</td>
</tr>
<tr>
<td>SMA</td>
<td>Screen Manufacturers Association</td>
</tr>
<tr>
<td>SMACNA</td>
<td>Sheet Metal and Air Conditioning Contractors' National Association</td>
</tr>
<tr>
<td>SMPTE</td>
<td>Society of Motion Picture and Television Engineers</td>
</tr>
<tr>
<td>SPFA</td>
<td>Spray Polyurethane Foam Alliance</td>
</tr>
<tr>
<td>SPIB</td>
<td>Southern Pine Inspection Bureau (The)</td>
</tr>
<tr>
<td>SPRI</td>
<td>Single Ply Roofing Industry</td>
</tr>
<tr>
<td>SSINA</td>
<td>Specialty Steel Industry of North America</td>
</tr>
<tr>
<td>SSPC</td>
<td>SSPC: The Society for Protective Coatings</td>
</tr>
<tr>
<td>STI</td>
<td>Steel Tank Institute</td>
</tr>
<tr>
<td>SWI</td>
<td>Steel Window Institute</td>
</tr>
<tr>
<td>SWRI</td>
<td>Sealant, Waterproofing, &amp; Restoration Institute</td>
</tr>
<tr>
<td>TCA</td>
<td>Tile Council of America, Inc. (Now TCNA)</td>
</tr>
<tr>
<td>TCNA</td>
<td>Tile Council of North America, Inc.</td>
</tr>
<tr>
<td>TIA/EIA</td>
<td>Telecommunications Industry Association/Electronic Industries Alliance</td>
</tr>
<tr>
<td>TMS</td>
<td>The Masonry Society</td>
</tr>
<tr>
<td>TPI</td>
<td>Truss Plate Institute, Inc.</td>
</tr>
<tr>
<td>TPI</td>
<td>Turfgrass Producers International</td>
</tr>
<tr>
<td>TRI</td>
<td>Tile Roofing Institute</td>
</tr>
<tr>
<td>UL</td>
<td>Underwriters Laboratories Inc.</td>
</tr>
<tr>
<td>UNI</td>
<td>Uni-Bell PVC Pipe Association</td>
</tr>
<tr>
<td>USAV</td>
<td>USA Volleyball</td>
</tr>
</tbody>
</table>
USGBC  U.S. Green Building Council
USITT  United States Institute for Theatre Technology, Inc.
WASTEC  Waste Equipment Technology Association
WCLIB  West Coast Lumber Inspection Bureau
WCMA  Window Covering Manufacturers Association
WCSC  Window Covering Safety Council
(Formerly: WCMA - Window Covering Manufacturers Association)
WDMA  Window & Door Manufacturers Association
(Formerly: NWWDA - National Wood Window and Door Association)
WI  Woodwork Institute (Formerly: WIC - Woodwork Institute of California)
WIC  Woodwork Institute of California
(Now WI)
WMMPA  Wood Moulding & Millwork Producers Association
WSRCA  Western States Roofing Contractors Association
WWPA  Western Wood Products Association

C. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list.

IAPMO  International Association of Plumbing and Mechanical Officials
ICC  International Code Council
ICC-ES  ICC Evaluation Service, Inc.
UBC  Uniform Building Code
(See ICC)

D. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web sites are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

CE  Army Corps of Engineers
CPSC  Consumer Product Safety Commission
DOC  Department of Commerce
DOD  Department of Defense
DOE  Department of Energy
EPA  Environmental Protection Agency
FAA  Federal Aviation Administration
FCC  Federal Communications Commission
FDA  Food and Drug Administration
GSA  General Services Administration
HUD  Department of Housing and Urban Development
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LBL</td>
<td>Lawrence Berkeley National Laboratory</td>
</tr>
<tr>
<td>NCHRP</td>
<td>National Cooperative Highway Research Program (See TRB)</td>
</tr>
<tr>
<td>NIST</td>
<td>National Institute of Standards and Technology</td>
</tr>
<tr>
<td>OSHA</td>
<td>Occupational Safety &amp; Health Administration</td>
</tr>
<tr>
<td>PBS</td>
<td>Public Buildings Service (See GSA)</td>
</tr>
<tr>
<td>PHS</td>
<td>Office of Public Health and Science</td>
</tr>
<tr>
<td>RUS</td>
<td>Rural Utilities Service (See USDA)</td>
</tr>
<tr>
<td>SD</td>
<td>State Department</td>
</tr>
<tr>
<td>TRB</td>
<td>Transportation Research Board</td>
</tr>
<tr>
<td>USDA</td>
<td>Department of Agriculture</td>
</tr>
<tr>
<td>USPS</td>
<td>Postal Service</td>
</tr>
</tbody>
</table>

E. Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations in the following list. Names, telephone numbers, and Web sites are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADAAG</td>
<td>Americans with Disabilities Act (ADA) Architectural Barriers Act (ABA) Accessibility Guidelines for Buildings and Facilities Available from U.S. Access Board</td>
</tr>
<tr>
<td>DOD</td>
<td>Department of Defense Military Specifications and Standards Available from Department of Defense Single Stock Point</td>
</tr>
<tr>
<td>DSCC</td>
<td>Defense Supply Center Columbus (See FS)</td>
</tr>
<tr>
<td>FED-STD</td>
<td>Federal Standard (See FS)</td>
</tr>
<tr>
<td>FS</td>
<td>Federal Specification Available from Department of Defense Single Stock Point Available from Defense Standardization Program Available from General Services Administration Available from National Institute of Building Sciences</td>
</tr>
<tr>
<td>FTMS</td>
<td>Federal Test Method Standard (See FS)</td>
</tr>
<tr>
<td>MIL</td>
<td>(See MILSPEC)</td>
</tr>
<tr>
<td>MIL-STD</td>
<td>(See MILSPEC)</td>
</tr>
</tbody>
</table>
MILSPEC Military Specification and Standards
Available from Department of Defense Single Stock Point

UFAS Uniform Federal Accessibility Standards
Available from Access Board

F. State Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web sites are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION
SECTION 01 42 16

DEFINITIONS AND CONVENTIONS

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes definitions of certain terms used in the specifications, and certain conventions used in the specifications and associated Contract Documents, including explanations of the language, abbreviations, and format.

B. Limitations of Scope: The definitions and explanations included in this section are not necessarily, either complete or exclusive, but are general for the work to the extent such definitions or explanations are not stated more explicitly in other provisions of the Contract Documents.

C. Related Sections:
   1. See the “General Conditions of the Construction Contract” for definition of Means and Methods.

1.02 DEFINITIONS

A. General Requirements: Provisions and requirements of other Division 01 Sections applying to the entire work of the Contract and to other elements of the work are included in the Conditions of the Contract.

B. Indicated: Requirements expressed by graphic representations, notes or schedules on the Drawings, and in other paragraphs or schedules in the specifications, and to similar requirements in the Contract Documents. Where terms such as “shown”, “noted”, “scheduled” and “specified” are used.

C. Directed: Terms such as “directed”, “requested”, “authorized”, “selected”, “approved”, “required”, “accepted”, and “permitted” mean “directed by the Architect”, “requested by the Architect”, and similar phrases. However, no such implied meaning will be interpreted to extend the Architect’s responsibility into the Contractor’s area of construction supervision.

D. Installer: The entity (person or firm) engaged by the Contractor, either as an employee, subcontractor or lower tier for the performance of a particular construction activity, including installation, erection, application and similar required operations. Installers are required to be experienced in the operations they are engaged to perform.
   1. The term “experienced”, when used with the term “Installer” means having completed a minimum of 5 successful previous projects similar in size and scope to this Project, and being familiar with the precautions required, and having complied with requirements of the authorities having jurisdiction.
2. Where the specifications require Installer experience or other qualifications, such requirements apply to the firm and not to its employees or individual members. Where firm ownership has changed after the required experience occurred, Architect and Owner reserve the right to consider the ownership change as invalidating the experience requirements.

E. **Specialists**: The specifications require that certain specific construction activities shall be performed by specialists who are recognized experts in the operations to be performed. The specialists must be engaged for those activities and the assignments are requirements over which the Contractor has no choice or option. Nevertheless, the ultimate responsibility for fulfilling Contract requirements remains with the Contractor.

1. These requirements shall not be interpreted to conflict with the enforcement of the building codes and similar regulations governing the Work. They are also not intended to interfere with local trade union jurisdictional settlements and similar conventions.

F. **Trades**: The use of certain titles such as “carpentry” is not intended to imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as “carpenter”. It also does not imply that the requirements specified apply exclusively to trade-persons of that corresponding generic name.

G. **Project Site**: The space available to the Contractor for the performance of the Work, either exclusively or in conjunction with others performing other work as part of the Project. The extent of the project site is shown on the Drawings, and may or may not be identical with the description of the land upon which the project is to be built.

H. **Testing Agency or Laboratory**: An independent entity engaged to perform specific inspections or tests of the work, either at the project site or elsewhere, and to report on, and if required, interpret the results of those inspections or tests.

I. **Approve**: Where used in conjunction with the Architect’s action on the Contractor’s submittals, applications, and requests, is limited to the Architect’s responsibilities and duties as specified in the General and Supplementary Conditions. Such approval shall not release the Contractor from responsibility to fulfill requirements of the Contract Documents, unless otherwise provided in the Contract Documents.

J. **Regulations**: The term "Regulations" includes laws, statutes, ordinances, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work.

K. **Contractor’s Option**: Where materials, products, systems, or methods are specified to be at the Contractor’s option, the choice of which material, method, product, or system will be used is solely the Contractor's. There will be no change in Contract Sum or Time because of such choice.

L. **Furnish**: The term “furnish” is used to mean "supply and deliver to the project site, ready for unloading, unpacking, assembly, installation, and similar operations".

DEFINITIONS AND CONVENTIONS
01 42 16 - 2
M. **Install**: The term “install” is used to describe operations at the project site including the actual “unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations”.

N. **Provide**: The term “provide” means “to furnish and install, complete and ready for the intended use”.

O. **Guarantee**: The narrow definition of the term “warranty” is hereby established as applying to both “warranty” and “guarantee”, which terms are used interchangeably.

### 1.03 SPECIFICATION CONVENTIONS

A. **Specification Content Conventions**: In certain circumstances language used in the specifications and other Contract Documents is of the abbreviated type. Implied words and meanings will be appropriately interpreted. Singular words will be interpreted as plural and plural words will be interpreted as singular where applicable and where the full context of the Contract Documents so indicates.

B. **Specification Format**: The specifications are organized into Divisions and Sections based on the CSI 49-Division format, generally conforming to CSI “Masterformat 2004” for section titles and numbers.

C. **Imperative Language**: Imperative language is used generally in the specifications. Requirements expressed imperatively are to be performed by the Contractor. At certain locations in the text, for clarity, contrasting subjective language is used to describe the responsibilities which must be fulfilled either indirectly by the Contractor or, when so noted, by others.

### 1.04 SPECIFICATION AND DRAWING CONVENTIONS

A. **Division 01 General Requirements**: Requirements of Sections in Division 01 apply to the Work of all sections in the specifications.

B. **Specification Content**: The specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
   1. Imperative mood and streamlined language are generally used in the specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
   2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.

C. **Graphic symbols used on the Drawings**: Graphic symbols used on the Drawings are those recognized in the construction industry for purposes indicated. Where not otherwise noted, symbols are defined by “Architectural Graphic Standards”, published by John Wiley & Sons, Inc., tenth edition.
D. Mechanical/Electrical Drawings:
   1. Graphic symbols used on mechanical and electrical Drawings are generally aligned with symbols recommended by ASHRAE. Where appropriate, they are supplemented by more specific symbols recommended by technical associations including ASME, ASPE, IEEE and similar organizations. Refer instances of uncertainty to the Architect for clarification before proceeding.

E. Drawing Coordination: Requirements for materials and products identified on the Drawings are described in detail in the Specifications. One or more of the following are used on the Drawings to identify materials and products:
   1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
   2. Abbreviations: Materials and products are identified by abbreviations published as part of the U.S. National CAD Standard and scheduled on Drawings.
   3. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION
1.01 SUMMARY

A. Section includes requirements for:
   1. Temporary utilities, support facilities, and security and protection facilities.
   2. Project identification signs.

B. Related Sections:
   1. Division 01 Section "Summary" for work restrictions and limitations on utility interruptions.
   2. Division 01 Section “Indoor Air Quality Management Plan” for protection of HVAC systems and indoor air quality from dust, chemicals, mold, and debris
   3. Division 32 Section "Concrete Paving" for construction and maintenance of cement concrete pavement for temporary roads and paved areas.

1.02 USE CHARGES

A. General: Installation and removal of and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Owner's construction forces, Architect, testing agencies, and authorities having jurisdiction.

B. Utilities in Tower: Some temporary construction connections will be provided in the Tower for Contractor use. Verify with Owner’s Representative as to type and location.

C. Steam: Steam is available for use by the Contractor from the Art/Music Building.

D. Sewer Service: Owner will pay sewer service use charges for sewer usage by all entities for construction operations.

E. Water Service: Owner will pay water service use charges for water used by all entities for construction operations.

F. Electric Power Service: Owner will pay electric power service use charges for electricity used by all entities for construction operations except for electric heating for winter heating of construction areas. Costs associated with Contractor’s use of electric heating devices for winter construction heating shall be borne by the Contractor.
   1. Electrical Service in Tower: Electrical service connections will be provided in the Tower for Contractor use. Verify with Owner’s Representative as to location and characteristics.

G. Water and Sewer Service from Existing System: Water from Owner's existing water system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.
H. Electric Power Service from Existing System: Electric power from Owner’s existing system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.

1.03 INFORMATIONAL SUBMITTALS

A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.

B. Erosion- and Sedimentation-Control Plan: Show compliance with requirements of EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent.

C. Moisture-Protection Plan: Describe procedures and controls for protecting materials and construction from water absorption and damage, including delivery, handling, and storage provisions for materials subject to water absorption or water damage, discarding water-damaged materials, protocols for mitigating water intrusion into completed Work, and replacing water damaged Work.

1. Indicate sequencing of work that requires water, such as sprayed fire-resistive materials, plastering, and terrazzo grinding, and describe plans for dealing with water from these operations. Show procedures for verifying that wet construction has dried sufficiently to permit installation of finish materials.

D. Dust-Control and HVAC-Control Plan: Submit coordination drawing and narrative that indicates the dust-control and HVAC-control measures proposed for use, proposed locations, and proposed time frame for their operation. Identify further options if proposed measures are later determined to be inadequate. Include the following:

1. Locations of dust-control partitions at each phase of the work.
2. HVAC system isolation schematic drawing.
3. Location of proposed air filtration system discharge.
4. Other dust-control measures.
5. Waste management plan.

1.04 QUALITY ASSURANCE

A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

1.05 PROJECT CONDITIONS

A. Temporary Use of Permanent Facilities: Engage installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.
PART 2 - PRODUCTS

2.01 MATERIALS

A. Chainlink Fencing: Contractor Option, provide one of the following:
   1. Chainlink Fencing: Minimum 2-inch, 0.148-inch-thick, galvanized steel, chainlink fabric fencing; minimum 6 feet high with galvanized steel pipe posts; minimum 2-3/8-inch-OD line posts and 2-7/8-inch-OD corner and pull posts.
   2. Portable Chainlink Fencing: Minimum 2-inch, 0.148-inch-thick, galvanized steel, chainlink fabric fencing; minimum 6 feet high with galvanized steel pipe posts; minimum 2-3/8-inch-OD line posts and 2-7/8-inch-OD corner and pull posts, with 1-5/8-inch-OD top and bottom rails. Provide concrete or galvanized steel bases for supporting posts.

B. Polyethylene Sheet: Reinforced, fire-resistive sheet, 10 mils (0.25 mm) minimum thickness, with flame-spread rating of 15 or less per ASTM E 84.

C. Insulation: Unfaced mineral-fiber blanket, manufactured from glass, slag wool, or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively.

2.02 TEMPORARY FACILITIES

A. Field Offices, General: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.

B. Field Office: In addition to field office required by Contractor, provide separate field office of sufficient size to accommodate needs of full-time Owner’s Representative, Owner, Architect, and construction personnel office activities and to accommodate project meetings specified in other Division 01 Sections. Keep offices clean and orderly. Full-time Owner’s rep and Architect will share a field office.

C. Furnish and equip offices as follows:
   1. Furniture required for Project-site documents including file cabinets, plan tables, plan racks, and bookcases.
   2. Conference room of sufficient size to accommodate meetings of 12 individuals. Provide electrical power service and 120-V ac duplex receptacles, with not less than 1 receptacle on each wall. Furnish room with conference table, chairs, and 4-foot-square tack and marker boards.
   3. Drinking water and private toilet.
   5. Heating and cooling equipment necessary to maintain a uniform indoor temperature of 68 to 72 deg F.
   6. Lighting fixtures capable of maintaining average illumination of 20 fc at desk height.

D. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.
   1. Store combustible materials apart from building.
2.03 EQUIPMENT

A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

B. HVAC Equipment: Unless Owner authorizes use of permanent HVAC system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.
   1. Hot water is available for use from nearby Art/Music Building supply lines.
   2. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
   3. Heating Units: Listed and labeled for type of fuel being consumed, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
   4. Permanent HVAC System: If Owner authorizes use of permanent HVAC system for temporary use during construction, provide filter with MERV of 8 at each return air grille in system and remove at end of construction and clean HVAC system as required in Division 01 Section "Closeout Procedures".

C. Air Filtration Units: HEPA primary and secondary filter-equipped portable units with four-stage filtration. Provide single switch for emergency shutoff. Configure to run continuously.

PART 3 - EXECUTION

3.01 INSTALLATION, GENERAL

A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.
   1. Locate facilities to limit site disturbance as specified in Division 01 Section "Summary."

B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.02 TEMPORARY UTILITY INSTALLATION

A. General: Install temporary service or connect to existing service.
   1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.

B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.

C. Water Service: Connect to Owner's existing water service facilities. Clean and maintain water service facilities in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.
D. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

E. Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.

F. Isolation of Work Areas in Occupied Facilities: Prevent dust, fumes, and odors from entering occupied areas.
   1. Prior to commencing work, isolate the HVAC system in area where work is to be performed in accordance with approved coordination drawings.
      a. Disconnect supply and return ductwork in work area from HVAC systems servicing occupied areas.
      b. Maintain negative air pressure within work area using HEPA-equipped air filtration units, starting with commencement of temporary partition construction, and continuing until removal of temporary partitions is complete.
   2. Maintain dust partitions during the Work. Use vacuum collection attachments on dust-producing equipment. Isolate limited work within occupied areas using portable dust containment devices.
   3. Perform daily construction cleanup and final cleanup using approved, HEPA-filter-equipped vacuum equipment.

G. Ventilation and Humidity Control: Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.
   1. Provide dehumidification systems when required to reduce substrate moisture levels to level required to allow installation or application of finishes.

H. Electric Power Service: Connect to Owner’s existing electric power service. Maintain equipment in a condition acceptable to Owner.

I. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.
   1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.

J. Telephone Service: Provide temporary telephone service in common-use facilities for use by all construction personnel. Install one telephone line for each field office.
   1. Provide additional telephone lines for the following:
      a. Provide a dedicated telephone line for each facsimile machine in each field office.
      b. Provide one telephone line for Owner's use.
2. At each telephone, post a list of important telephone numbers, including:
   a. Police and fire departments.
   b. Ambulance service.
   c. Contractor’s home office.
   d. Architect’s office.
   e. Engineers’ offices.
   f. Owner’s office.
   g. Principal subcontractors’ field and home offices.

3. Provide superintendent with cellular telephone or portable two-way radio for use when away from field office.

K. Electronic Communication Service: Provide a desktop computer in the primary field office adequate for use by Architect and Owner to access project electronic documents and maintain electronic communications. Equip computer with not less than the following:
   1. Processor: Intel Pentium D or Intel Core Duo, 1.8 GHz processing speed.
   2. Memory: 2 gigabyte.
   4. Display: 19-inch LCD monitor with 128 Mb dedicated video RAM.
   5. Full-size keyboard and mouse.
   8. Productivity Software:
      a. Microsoft Office Professional, XP or higher, including Word, Excel, and Outlook.
      b. Adobe Reader 7.0 or higher.
      c. WinZip 7.0 or higher.
   9. Printer: "All-in-one" unit equipped with printer server, combining color printing, photocopying, scanning, and faxing, or separate units for each of these 3 functions.
   10. Internet Service: Broadband modem, router and ISP, equipped with hardware firewall, providing minimum 384 Kbps upload and 1 Mbps download speeds at each computer.
   11. Internet Security: Integrated software, providing software firewall, virus, spyware, phishing and spam protection in a combined application.

3.03 SUPPORT FACILITIES INSTALLATION

A. General: Comply with the following:
   1. Provide construction for temporary offices, shops, and sheds located within construction area or within 30 feet of building lines that is noncombustible according to ASTM E 136. Comply with NFPA 241.
   2. Maintain support facilities until Architect schedules Substantial Completion inspection. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.
B. Temporary Roads and Paved Areas: Construct and maintain temporary roads and paved areas adequate for construction operations. Locate temporary roads and paved areas as indicated on Drawings.
   1. Provide dust-control treatment that is nonpolluting and nontracking. Reapply treatment as required to minimize dust.

C. Temporary Use of Permanent Roads and Paved Areas: Locate temporary roads and paved areas in same location as permanent roads and paved areas. Construct and maintain temporary roads and paved areas adequate for construction operations. Extend temporary roads and paved areas, within construction limits indicated, as necessary for construction operations.
   1. Coordinate elevations of temporary roads and paved areas with permanent roads and paved areas.
   2. Prepare subgrade and install subbase and base for temporary roads and paved areas according to Division 31 Section "Earth Moving."
   3. Recondition base after temporary use, including removing contaminated material, regrading, proofrolling, compacting, and testing.

D. Traffic Controls: Comply with requirements of authorities having jurisdiction.
   1. Protect existing site improvements to remain including curbs, pavement, and utilities.
   2. Maintain access for fire-fighting equipment and access to fire hydrants.

E. Parking: Use designated areas of Owner's existing parking areas for construction personnel.

F. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.
   1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties nor endanger permanent Work or temporary facilities.
   2. Remove snow and ice as required to minimize accumulations.

G. Waste Disposal Facilities: Comply with requirements specified in Division 01 Section "Construction Waste Management and Disposal."

H. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with Division 01 Section "Execution" for progress cleaning requirements.

I. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.
   1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.

J. Temporary Elevator Use: Refer to Division 14 Sections for temporary use of new elevators.

K. Existing Elevator Use: Use of Owner's existing elevators will be permitted, provided elevators are cleaned and maintained in a safe working condition. At Substantial Completion, restore elevators indicated to remain to condition existing before initial use, including replacing worn cables, guide shoes, and similar items of limited life.
   1. Do not load elevators beyond their rated weight capacity.
2. Provide protective coverings, barriers, devices, signs, or other procedures to protect elevator car and entrance doors and frame. If, despite such protection, elevators become damaged, engage elevator Installer to restore damaged work so no evidence remains of correction work. Return items that cannot be refinished in field to the shop, make required repairs and refinish entire unit, or provide new units as required.

L. Existing Stair Usage: Use of Owner's existing stairs will be permitted, provided stairs are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore stairs to condition existing before initial use.
   1. Provide protective coverings, barriers, devices, signs, or other procedures to protect stairs and to maintain means of egress. If stairs become damaged, restore damaged areas so no evidence remains of correction work.

3.04 PROJECT IDENTIFICATION SIGNS

A. Provide two project identification signs of design and construction as approved by Architect.
   1. Project identification sign shall be 32 square feet in area, with graphic, and black or colors on a white background as per attached drawing.
   2. Sign shall be approved by Architect and Owner before being painted.

B. Signs and support posts shall be of treated wood or steel suitable to support the sign for the duration of the Project.

C. Contractor shall maintain the Project Identification sign throughout the construction period and remove at time agreed upon by Owner and Architect.
   1. Maintain and touchup signs so they are legible at all times.

D. Erect signs on site at locations approved by Owner and Architect.

E. No other signs are allowed without Owner permission except those required by law.
   1. Contractor and sub-contractors shall not mount any signs on the building. Contractor and sub-contractor signage shall be limited to mounting on trailers or construction fencing.

F. Other Temporary Signs: Provide other signs as indicated and as required to inform public and individuals seeking entrance to Project.
   1. Provide temporary, directional signs for construction personnel and visitors.

3.05 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
   1. Comply with work restrictions specified in Division 01 Section "Summary."

B. Temporary Erosion and Sedimentation Control: Comply with requirements of 2003 EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent and requirements specified in Division 31 Section "Temporary Erosion and Sedimentation Control."
C. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.

D. Tree and Plant Protection: Comply with requirements specified in Division 01 Section "Temporary Tree and Plant Protection."

E. Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion. Obtain extended warranty for Owner. Perform control operations lawfully, using environmentally safe materials.

F. Site Enclosure Fence: Before construction operations begin, Owner will furnish and install site enclosure fence in a manner that will prevent people and animals from easily entering site except by entrance gates.
   1. Extent of Fence: As required to enclose entire Project site or portion determined sufficient to accommodate construction operations.
   2. Maintain security by limiting number of keys and restricting distribution to authorized personnel. Furnish one set of keys to Owner.
   3. Fence shall be maintained by Contractor for the duration of the project and removed by Contractor at time agreed upon by Owner and Architect.

G. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

H. Temporary Egress: Maintain temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction.

I. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.
   1. Where heating or cooling is needed and permanent enclosure is not complete, insulate temporary enclosures.

J. Temporary Partitions: Provide floor-to-ceiling dustproof partitions to limit dust and dirt migration and to separate areas occupied by Owner from fumes and noise.
   1. Construct dustproof partitions with gypsum wallboard with joints taped on occupied side, and fire-retardant plywood on construction operations side.
   2. Construct dustproof partitions with two layers of 6-mil polyethylene sheet on each side. Cover floor with two layers of 6-mil polyethylene sheet, extending sheets 18 inches up the sidewalls. Overlap and tape full length of joints. Cover floor with fire-retardant treated plywood.
      a. Construct vestibule and airlock at each entrance through temporary partition with not less than 48 inches between doors. Maintain water-dampened foot mats in vestibule.
   3. Where fire-resistance-rated temporary partitions are indicated or are required by authorities having jurisdiction, construct partitions according to the rated assemblies.
4. Seal joints and perimeter. Equip partitions with gasketed dustproof doors and security locks where openings are required.

   1. Prohibit smoking in construction areas.
   2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
   3. Develop and supervise an overall fire-prevention and protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.
   4. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

L. Indoor Air Quality: Comply with provisions of Division 01 Section Construction Indoor Air Quality Management.

3.06 MOISTURE AND MOLD CONTROL


B. Exposed Construction Phase: Before installation of weather barriers, when materials are subject to wetting and exposure and to airborne mold spores, protect as follows:
   1. Protect porous materials from water damage.
   2. Protect stored and installed material from flowing or standing water.
   3. Keep porous and organic materials from coming into prolonged contact with concrete.
   4. Remove standing water from decks.
   5. Keep deck openings covered or dammed.

C. Partially Enclosed Construction Phase: After installation of weather barriers but before full enclosure and conditioning of building, when installed materials are still subject to infiltration of moisture and ambient mold spores, protect as follows:
   1. Do not load or install drywall or other porous materials or components, or items with high organic content, into partially enclosed building.
   2. Keep interior spaces reasonably clean and protected from water damage.
   3. Periodically collect and remove waste containing cellulose or other organic matter.
   4. Discard or replace water-damaged material.
   5. Do not install material that is wet.
   6. Discard, replace or clean stored or installed material that begins to grow mold.
   7. Perform work in a sequence that allows any wet materials adequate time to dry before enclosing the material in drywall or other interior finishes.
D. Controlled Construction Phase of Construction: After completing and sealing of the building enclosure but prior to the full operation of permanent HVAC systems, maintain as follows:

1. Control moisture and humidity inside building by maintaining effective dry-in conditions.
2. Use permanent HVAC system to control humidity.
3. Comply with manufacturer's written instructions for temperature, relative humidity, and exposure to water limits.
   a. Hygroscopic materials that may support mold growth, including wood and gypsum-based products, that become wet during the course of construction and remain wet for 48 hours are considered defective.
   b. Measure moisture content of materials that have been exposed to moisture during construction operations or after installation. Record daily readings over a forty-eight hour period. Identify materials containing moisture levels higher than allowed. Report findings in writing to Architect.
   c. Remove materials that cannot be completely restored to their manufactured moisture level within 48 hours.

3.07 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

B. Maintenance: Maintain facilities in good operating condition until removal.
   1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.

C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.

D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
   1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
   2. Remove temporary roads and paved areas not intended for or acceptable for integration into permanent construction. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.
   3. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Division 01 Section "Closeout Procedures."

END OF SECTION
Colorado State University - Pueblo
Academic Resources Center

2200 Bonforte Boulevard, Pueblo, Colorado

Completion Date: Emergency Contact Number:

Owner: Board of Governors of the Colorado State University System
Project Manager: Alain Dalmau Architects

Architect: Architect of Record: Bennett Wagner & Grody Architects
Associate Architect: demmon design studios

Contractor:

Provide two 4' x 8' Project Signs
Provide photograph in color. Art provided by Architect.
Provide colored band with white lettering
White background color
Charcoal color type

Provide Futura Condensed and Arial type fonts as shown

TEMPORARY FACILITIES AND CONTROLS
01 50 00 - 12
SECTION 01 56 39

TEMPORARY TREE AND PLANT PROTECTION

PART 1 - GENERAL

1.01  SUMMARY

A. Section includes general protection and pruning of existing trees and plants that are affected by execution of the Work, whether temporary or permanent construction.

B. Related Sections:
   1. Division 01 Section "Temporary Facilities and Controls" for temporary site fencing.
   2. Division 31 Section "Site Clearing" for removing existing trees and shrubs.

1.02  DEFINITIONS

A. Caliper: Diameter of a trunk measured by a diameter tape or the average of the smallest and largest diameters at 6 inches above the ground for trees up to, and including, 4-inch size; and 12 inches above the ground for trees larger than 4-inch size.

B. Plant-Protection Zone: Area surrounding individual trees, groups of trees, shrubs, or other vegetation to be protected during construction, and indicated on Drawings.

C. Tree-Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction, and defined by the demolition plan.

D. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

1.03  SUBMITTALS

A. Product Data: For each type of product indicated.

B. Tree Pruning Schedule: Written schedule detailing scope and extent of pruning of trees to remain that interfere with or are affected by construction.
   1. Species and size of tree.
   2. Location on site plan. Include unique identifier for each.
   3. Reason for pruning.
   4. Description of pruning to be performed.
   5. Description of maintenance following pruning.

C. Qualification Data: For qualified arborist and tree service firm.

D. Certification: From arborist, certifying that trees indicated to remain have been protected during construction according to recognized standards and that trees were promptly and properly treated and repaired when damaged.
E. Maintenance Recommendations: From arborist, for care and protection of trees affected by construction during and after completing the Work.

F. Existing Conditions: Documentation of existing trees and plantings indicated to remain, which establishes preconstruction conditions that might be misconstrued as damage caused by construction activities.
   1. Use sufficiently detailed photographs or videotape.
   2. Include plans and notations to indicate specific wounds and damage conditions of each tree or other plants designated to remain.

G. LEED Submittals:
   1. Credit MR 4.1 and Credit MR 4.2: Product data and certification letter indicating percentages by weight of post-consumer and pre-consumer recycled content for products having recycled content. Include statement indicating costs for each product having recycled content.
   2. Credit MR 5.1 and Credit MR 5.2: Product data for regional materials indicating location and distance from Project of material manufacturer and point of extraction, harvest, or recovery for each raw material. Include statement indicating cost for each regional material and the fraction by weight that is considered regional.

1.04 QUALITY ASSURANCE

A. Arborist Qualifications: Certified Arborist as certified by ISA.

B. Tree Service Firm Qualifications: An experienced tree service firm that has successfully completed temporary tree and plant protection work similar to that required for this Project and that will assign an experienced, qualified arborist to Project site during execution of the Work.

C. Preinstallation Conference: Conduct conference at Project site.
   1. Review methods and procedures related to temporary tree and plant protection including, but not limited to, the following:
      a. Construction schedule. Verify availability of materials, personnel, and equipment needed to make progress and avoid delays.
      b. Enforcing requirements for protection zones.
      c. Arborist’s responsibilities.
      d. Field quality control.

1.05 PROJECT CONDITIONS

A. The following practices are prohibited within protection zones:
   1. Storage of construction materials, debris, or excavated material.
   2. Parking vehicles or equipment.
   3. Foot traffic.
   4. Erection of sheds or structures.
   5. Impoundment of water.
   6. Excavation or other digging, unless otherwise indicated.
   7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.
B. Do not direct vehicle or equipment exhaust toward protection zones.

C. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones and organic mulch.

1.06 QUALITY REQUIREMENTS

A. LEED REQUIREMENTS: Materials/products shall contain the maximum amount of recycled content allowed that retains material integrity. Preference shall be given to materials that are manufactured, harvested, extracted, mined, quarried, etc. within a 500 mile radius of the project site.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Topsoil: Natural or cultivated top layer of the soil profile or manufactured topsoil; containing organic matter and sand, silt, and clay particles; friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects more than 1 inch in diameter; and free of weeds, roots, and toxic and other non-soil materials.
   1. Obtain topsoil only from well-drained sites where topsoil is 4 inches (100 mm) deep or more; do not obtain from bogs or marshes.

B. Topsoil: Stockpiled topsoil from location shown on Drawings or imported or manufactured topsoil complying with ASTM D 5268.

C. Organic Mulch: Free from deleterious materials and suitable as a top dressing for trees and shrubs, consisting of one of the following:
   1. Type: shredded bark mulch.
   2. Color: Natural.

D. Protection-Zone Fencing: Fencing fixed in position and meeting the following requirements.
   1. Chain-Link Protection-Zone Fencing: Galvanized-steel fencing fabricated from minimum 2-inch (50-mm) opening, 0.148-inch- (3.76-mm-) diameter wire chain-link fabric; with pipe posts, minimum 2-3/8-inch- (60-mm-) OD line posts, and 2-7/8-inch- (73-mm-) OD corner and pull posts; with 1-5/8-inch- (42-mm-) OD top rails and 0.177-inch- (4.5-mm-) diameter bottom tension wire; with tie wires, hog ring ties, and other accessories for a complete fence system.
      a. Height: 6 feet (1.8 m).

   2. Gates: Single swing access gates matching material and appearance of fencing, to allow for maintenance activities within protection zones; leaf width 36 inches.
PART 3 - EXECUTION

3.01 EXAMINATION

A. Erosion and Sedimentation Control: Examine the site to verify that temporary erosion- and sedimentation-control measures are in place. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.

B. For the record, prepare written report, endorsed by arborist, listing conditions detrimental to tree and plant protection.

3.02 PREPARATION

A. Locate and clearly identify trees, shrubs, and other vegetation to remain. Tie a 1-inch (25-mm) blue-vinyl tape around each tree trunk at 54 inches (1372 mm) above the ground.

B. Protect tree root systems from damage caused by runoff or spillage of noxious materials while mixing, placing, or storing construction materials. Protect root systems from ponding, eroding, or excessive wetting caused by dewatering operations.

C. Tree-Protection Zones: Mulch areas inside tree-protection zones and other areas indicated. 1. Apply 6-inch (150-mm) average thickness of organic mulch. Do not place mulch within 6 inches (150 mm) of tree trunks.

3.03 TREE- AND PLANT-PROTECTION ZONES

A. Protection-Zone Fencing: Install protection-zone fencing along edges of protection zones before materials or equipment are brought on the site and construction operations begin in a manner that will prevent people from easily entering protected area except by entrance gates. Construct fencing so as not to obstruct safe passage or visibility at vehicle intersections where fencing is located adjacent to pedestrian walkways or in close proximity to street intersections, drives, or other vehicular circulation.

1. Chain-Link Fencing: Install to comply with ASTM F 567 and with manufacturer's written instructions.

2. Posts: Set or drive posts into ground one-third the total height of the fence without concrete footings. Where a post is located on existing paving or concrete to remain, provide appropriate means of post support acceptable to Architect.

3. Access Gates: Install gates where needed and adjust to operate smoothly, easily, and quietly, free of binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding.

B. Maintain protection zones free of weeds and trash.

C. Repair or replace trees, shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations, in a manner approved by Architect.
D. Maintain protection-zone fencing and signage in good condition as acceptable to Architect and remove when construction operations are complete and equipment has been removed from the site.
   1. Do not remove protection-zone fencing, even temporarily, to allow deliveries or equipment access through the protection zone.
   2. Temporary access is permitted subject to preapproval in writing by arborist if a root buffer effective against soil compaction is constructed as directed by arborist. Maintain root buffer so long as access is permitted.

3.04 EXCAVATION

A. General: Excavate at edge of protection zones and for trenches indicated within protection zones according to requirements in Division 31 Section "Earth Moving."

B. Trenching near Trees: Where utility trenches are required within protection zones, hand excavate under or around tree roots or tunnel under the roots by drilling, auger boring, or pipe jacking. Do not cut main lateral tree roots or taproots; cut only smaller roots that interfere with installation of utilities. Cut roots as required for root pruning.

C. Redirect roots in backfill areas where possible. If encountering large, main lateral roots, expose roots beyond excavation limits as required to bend and redirect them without breaking. If encountered immediately adjacent to location of new construction and redirection is not practical, cut roots approximately 3 inches (75 mm) back from new construction and as required for root pruning.

D. Do not allow exposed roots to dry out before placing permanent backfill. Provide temporary earth cover or pack with peat moss and wrap with burlap. Water and maintain in a moist condition. Temporarily support and protect roots from damage until they are permanently relocated and covered with soil.

3.05 ROOT PRUNING

A. Prune roots that are affected by temporary and permanent construction. Prune roots as follows:
   1. Cut roots manually by digging a trench and cutting exposed roots with sharp pruning instruments; do not break, tear, chop, or slant the cuts. Do not use a backhoe or other equipment that rips, tears, or pulls roots.
   2. Cut Ends: as advised by Arborist.
   3. Temporarily support and protect roots from damage until they are permanently redirected and covered with soil.
   4. Cover exposed roots with burlap and water regularly.
   5. Backfill as soon as possible according to requirements in Division 31 Section "Earth Moving."

B. Root Pruning at Edge of Protection Zone: Prune roots 6 inches (150 mm) inside of the protection zone, by cleanly cutting all roots to the depth of the required excavation.
C. Root Pruning within Protection Zone: Clear and excavate by hand to the depth of the required excavation to minimize damage to root systems. Use narrow-tine spading forks, comb soil to expose roots, and cleanly cut roots as close to excavation as possible.

3.06 REGRADING

A. Lowering Grade: Where new finish grade is indicated below existing grade around trees, slope grade beyond the protection zone. Maintain existing grades within the protection zone.

B. Lowering Grade within Protection Zone: Where new finish grade is indicated below existing grade around trees, slope grade away from trees as recommended by arborist unless otherwise indicated.
   1. Root Pruning: Prune tree roots exposed by lowering the grade. Do not cut main lateral roots or taproots; cut only smaller roots. Cut roots as required for root pruning.

C. Raising Grade: Where new finish grade is indicated above existing grade around trees, slope grade beyond the protection zone. Maintain existing grades within the protection zone.

D. Minor Fill within Protection Zone: Where existing grade is 2 inches (50 mm) less below elevation of finish grade, fill with topsoil. Place topsoil in a single uncompacted layer and hand grade to required finish elevations.

3.07 FIELD QUALITY CONTROL

A. Inspections: Engage a qualified arborist to direct plant-protection measures in the vicinity of trees, shrubs, and other vegetation indicated to remain and to prepare inspection reports.

3.08 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Disposal: Remove excess excavated material, displaced trees, trash and debris, and legally dispose of them off Owner's property.

B. Comply with Division 01 Section “Construction Waste Management Plan”.

END OF SECTION
PART 1 - GENERAL

1.01 SUMMARY

A. This section includes:
   1. Application of either water or dust palliative or both for the alleviation or prevention of dust nuisance.
   2. Control of dust resulting from Contractor’s performance of the Work, either on or off the jobsite.

1.02 MATERIAL AND EQUIPMENT

A. Water: Make arrangements for securing the required volume of water.

B. Dust Palliative:
   1. Binder: Either miscible in water or be some form of material that is directly applied to the surface without water.
      a. For binders miscible in water use either a resin emulsion, an SSI type asphaltic emulsion, materials composed essentially of lignin sulfonate, or other binder miscible in water and which is non-corrosive and effective as a dust palliative.
      b. For binders applied to the surface without water use a product prepared from crude petroleum, effective as a dust palliative.

   2. Provide resin emulsion products composed of 56 to 63 percent semi-liquid petroleum resin and water with emulsifier, readily miscible with normal or hard water. Dilute with water at rate of one part emulsion to not more than 19 parts water, with mix showing no signs of breakdown or separation of resin base. Store resin emulsion in closed containers at temperatures above freezing. Do not use resin emulsion which has been stored for more than 3 months until tested and found acceptable.

1.03 APPLICATION

A. Either of the following methods (or both) may be used at the Contractor’s option.
   1. Water Method:
      a. Unless otherwise permitted by the Architect, apply water by means of pipelines and sprinklers. Make available at all times a mobile unit with a minimum capacity of 1000 gallons for applying water on the project.
      b. Apply water for compacting embankment material, fill materials, sub-base, base, or surfacing material, and for controlling dust by means of pressure type distribution or pipelines with a spray system, or hoses with nozzles that will ensure a uniform application of water.
2. Resin Binder Method:
   a. Mix binders with water at the rate of 4 to 19 parts of water to one part binder, the exact rate to be determined by dust control requirements. Mix by placing binder and water in spreading equipment or by other mixing method that will produce equivalent results.
   b. Apply the mixture with a spray system or pressure type asphalt distributors at an approximate rate of 0.2 to 0.8 gallons per square yard or as required for effective dust control.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION
SECTION 01 60 00

PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.

B. Related Sections:
   1. Division 01 Section "Allowances" for products selected under an allowance.
   2. Division 01 Section "Alternates" for products selected under an alternate.
   3. Division 01 Section "Substitution Procedures" for requests for substitutions.
   4. Division 01 Section "References" for applicable industry standards for products specified.
   5. Division 01 Section “Sustainable Design Requirements” for specific product requirements and limitations for substitutions.

1.02 DEFINITIONS

A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
   1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature, that is current as of date of the Contract Documents.
   2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.
   3. Comparable Product: Product that is demonstrated and approved through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

B. Basis-of-Design Product Specification: A specification in which a specific manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the specification.
1.03 ACTION SUBMITTALS

A. Comparable Product Requests: Submit request for consideration of each comparable product. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
   1. Include data to indicate compliance with the requirements specified in "Comparable Products" Article.
   2. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within one week of receipt of a comparable product request. Architect will notify Contractor of approval or rejection of proposed comparable product request within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.
      a. Form of Approval: As specified in Division 01 Section "Submittal Procedures."
      b. Use product specified if Architect does not issue a decision on use of a comparable product request within time allocated.

B. Basis-of-Design Product Specification Submittal: Comply with requirements in Division 01 Section "Submittal Procedures." Show compliance with requirements.

1.04 QUALITY ASSURANCE

A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.
   1. Each contractor is responsible for providing products and construction methods compatible with products and construction methods of other contractors.
   2. If a dispute arises between contractors over concurrently selectable but incompatible products, Architect will determine which products shall be used.

1.05 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.

B. Delivery and Handling:
   1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
   2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
   3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
   4. Inspect products on delivery to determine compliance with the Contract Documents and to determine that products are undamaged and properly protected.
C. Storage:
   1. Store products to allow for inspection and measurement of quantity or counting of units.
   2. Store materials in a manner that will not endanger Project structure.
   3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
   4. Store foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
   5. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
   6. Protect stored products from damage and liquids from freezing.
   7. Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.

1.06 PRODUCT WARRANTIES

A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
   1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
   2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner.

B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.
   1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
   2. Specified Form: When specified forms are included with the Specifications, prepare a written document using indicated form properly executed.
   3. Refer to Divisions 02 through 49. Sections for specific content requirements and particular requirements for submitting special warranties.

C. Submittal Time: Comply with requirements in Division 01 Section "Closeout Procedures."
PART 2 - PRODUCTS

2.01 PRODUCT SELECTION PROCEDURES

A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.
   1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
   2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
   3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
   4. Where products are accompanied by the term "as selected," Architect will make selection.
   6. Or Equal: For products specified by name and accompanied by the term "or equal," or "or approved equal," or "or approved," comply with requirements in "Comparable Products" Article to obtain approval for use of an unnamed product.

B. Product Selection Procedures:
   1. Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
   2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
   3. Products:
      a. Restricted List: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered, unless otherwise indicated.
      b. Nonrestricted List: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product.
   4. Manufacturers:
      a. Restricted List: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered, unless otherwise indicated.
      b. Nonrestricted List: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an
PRODUCT REQUIREMENTS

unnamed manufacturer, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed manufacturer's product.

5. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.

C. Visual Matching Specification: Where Specifications require "match Architect's sample", provide a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.

1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Division 01 Section "Substitution Procedures" for proposal of product.

D. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or similar phrase, select a product that complies with requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.02 COMPARABLE PRODUCTS

A. Conditions for Consideration: Architect will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect may return requests without action, except to record noncompliance with these requirements:

1. Evidence that the proposed product does not require revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.

2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, environmental impact, and specific features and requirements indicated.

3. Evidence that proposed product provides specified warranty.

4. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.

5. Samples, if requested.

PART 3 - EXECUTION (Not Used)

END OF SECTION
PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Environmental requirements for products.

B. Related Sections:
   1. Division 01 Section “Sustainable Design Requirements” for specific product requirements and limitations for substitutions.

1.02 DEFINITIONS

A. Definitions pertaining to sustainable development: As defined in ASTM E2114.

B. Biobased Materials: Fuels, chemicals, building materials, or electric power or heat produced from biomass as defined by The Biomass Research and Development Act of 2000. Minimum biobased content shall be as defined by the US Department of Agriculture pursuant to the US Farm Bill May 2002.
   1. Biobased content: The weight of the biobased material divided by the total weight of the product and expressed as a percentage by weight.

C. Chain-of-Custody: Process whereby a product or material is maintained under the physical possession or control during its entire life cycle.

D. Environmentally Preferable Products: Products and services that have a lesser or reduced effect on the environment in comparison to conventional products and services.

E. Stewardship: Responsible use and management of resources in support of sustainability.

F. Sustainability: The maintenance of ecosystem components and functions for future generations.

1.03 SUBMITTALS

A. Submit the following Record Submittals as specified in Division 01 Section “Project Record Documents”.
   1. Affirmative Procurement Reporting Form. Submit on form as approved by Owner.
   2. Submit environmental data in accordance with Table 1 of ASTM E2129 for the following products:
      a. Rough carpentry.
      b. Finish carpentry and architectural woodwork.
      c. Plastic fabrications.
      d. Composite surfacing.
      e. Solid polymer fabrications.
f. Building insulation.
g. Roofing.
h. Joint sealers.
i. Wood doors.
j. Glazed storefront and curtain wall.
k. Gypsum board.
l. Tile.
m. Wood wall and ceiling panels.
n. Acoustical ceilings.
o. Resilient flooring.
p. Carpet.
q. Paints and coatings.
r. Toilet Compartments.
s. Fixed audience seating.
t. Elevators.
u. Plumbing fixtures and equipment.
v. HVAC equipment.
w. Lighting equipment.

3. Material Safety Data Sheets (MSDS): For each product required by OSHA to have a MSDS, submit an MSDS. MSDS shall be prepared within the previous five years. Include information for MSDS Sections 1 – 16 in accordance with ANSI Z400.1 and as follows:
   b. Section 2: Composition/Information on Ingredients.
   c. Section 3: Hazards Identification.
   d. Section 4: First Aid Measures.
   e. Section 5: Fire Fighting Measures.
   g. Section 7: Handling and Storage.
   h. Section 8: Exposure Controls/Person Protection.
   i. Section 9: Physical and Chemical Properties.
   j. Section 10: Stability and Reactivity Data.
   k. Section 11: Toxicological Information. Include data used to determine the hazards cited in Section 3. Identify acute data, carcinogenicity, reproductive effects, and target organ effects. Provide written description of the process used in evaluating chemical hazards relative to preparation of the MSDS.
   l. Section 12: Ecological Information. Include data regarding environmental impacts during raw materials acquisition, manufacture, and use. Include data regarding environmental impacts in the event of an accidental release.
   m. Section 13: Disposal Considerations. Include data regarding the proper disposal of the chemical. Include information regarding recycling and reuse. Indicate whether or not the product is considered to be "hazardous waste" according the US EPA Hazardous Waste Regulations 40 CFR 261.
   n. Section 14: Transportation Information. Identify hazard class for shipping.
   o. Section 15: Regulatory Information. Identify federal, state, and local regulations applicable to the material.
p. Section 16: Other Information. Include additional information relative to recycled content, biobased content, and other information regarding environmental and health impacts. Identify the date MSDS was prepared. Life Cycle Assessment (LCA) tools are evolving in the marketplace. While they may provide useful overall information, most remain limited especially in their capacity to address toxicity and human health issues.

4. Chain of Custody: Submit chain-of-custody documentation for sustainable forestry for the following products:
   a. Rough carpentry.
   b. Interior architectural woodwork.
   c. Custom cabinets.
   d. Wood doors.
   e. Wood wall and ceiling panels.

1.04 SUBSTITUTIONS

A. Notify Owner when Contractor becomes aware of materials, equipment, or products that meet the aesthetic and programmatic intent of Contract Documents, but which are more environmentally responsible than materials, equipment, or products specified or indicated in the Contract Documents.

1. Requirements of Division 01 Section “Product Options and Substitutions” apply except prior to submitting detailed information required under that Section, submit the following for initial review by Owner and Architect:
   a. Product data including manufacturer's name, address, and phone number.
   b. Description of environmental advantages of proposed substitution over specified product.

1.05 PACKAGING

A. Where Contractor has the option to provide one of the listed products or equal, preference shall be given to products with minimal packaging and easily recyclable packaging as defined in ASTM D5834.

B. Maximize use of source reduction and recycling procedures outlined in ASTM D5834.

C. Provide minimum 5 percent post-consumer recycled content, or minimum 20 percent pre-consumer recycled content of packaging paper and paperboard in accordance with ASTM D5663.

1.06 ENVIRONMENTALLY PREFERABLE PRODUCTS

A. Provide environmentally preferable products to the greatest extent possible.

1. To the greatest extent possible, provide products and materials that have a lesser or reduced effect on the environment considering raw materials acquisition, production, manufacturing, packaging, distribution, reuse, operation, maintenance, and/or disposal of the product.
B. Provide products listed on the EPA Comprehensive Procurement Guidelines to the greatest extent practicable.

PART 2 - PRODUCTS

2.01 CERTIFIED WOOD

A. Credit MR 7: Provide a minimum of 50 percent (by cost) of wood-based materials that are produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship."

1. Wood-based materials include, but are not limited to, the following materials when made from wood, engineered wood products, or wood-based panel products:
   a. Rough carpentry.
   b. Miscellaneous carpentry.
   c. Finish carpentry.
   d. Architectural woodwork.
   e. Wood paneling.
   f. Wood veneer wall covering.
   g. Wood flooring.
   h. Wood cabinets.
   i. Furniture.

2.02 LOW-EMITTING MATERIALS

A. Credit EQ 4.1: For field applications that are inside the weatherproofing system, use adhesives and sealants that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D:

1. Wood Glues: 30 g/L.
2. Metal to Metal Adhesives: 30 g/L.
3. Adhesives for Porous Materials (Except Wood): 50 g/L.
4. Subfloor Adhesives: 50 g/L.
5. Plastic Foam Adhesives: 50 g/L.
6. Carpet Adhesives: 50 g/L.
7. Carpet Pad Adhesives: 50 g/L.
8. Ceramic Tile Adhesives: 65 g/L.
9. Structural Wood Member Adhesives 140 g/L.
10. Non-membrane Roof Sealant 300 g/L, Roadway Sealant 250 g/L.
11. VCT Adhesives: 50 g/L.
12. Cove Base Adhesives: 50 g/L.
13. Gypsum Board and Panel Adhesives: 50 g/L.
14. Rubber Floor Adhesives: 60 g/L.
15. Multipurpose Construction Adhesives: 70 g/L.
16. Contact Adhesive: 80 g/L.
17. Structural Glazing Adhesives: 100 g/L.
18. Special Purpose Contact Adhesive (contact adhesive that is used to bond melamine covered board, metal, unsupported vinyl, Teflon, ultra-high molecular weight polyethylene, rubber or wood veneer 1/16 inch or less in thickness to any surface): 250 g/L.

19. Top and Trim Adhesive: 250 g/L.
20. Plastic Cement Welding Compounds: 250 g/L.
21. ABS Welding Compounds: 325 g/L.
22. CPVC Welding Compounds: 490 g/L.
23. PVC Welding Compounds: 510 g/L.
24. Adhesive Primer for Plastic: 550 g/L.
25. Plastic Cement Welding Compounds: 250 g/L.
26. ABS Welding Compounds: 325 g/L.
27. CPVC Welding Compounds: 490 g/L.
28. PVC Welding Compounds: 510 g/L.
29. Adhesive Primer for Plastic: 550 g/L.
30. Sheet Applied Rubber Lining Adhesive: 850 g/L.
32. Aerosol Adhesive, General Purpose Web Spray: 55 percent by weight.
33. Special Purpose Aerosol Adhesive (All Types): 70 percent by weight.
34. Architectural Sealants: 250 g/L.
35. Single-Ply Roof Membrane Sealants: 450 g/L.
36. Other Sealants: 420 g/L.
37. Sealant Primers for Nonporous Substrates: 250 g/L.
38. Sealant Primers for Porous Substrates: 775 g/L.
39. Other Sealant Primers: 750 g/L.

B. Credit EQ 4.2: For field applications that are inside the weatherproofing system, use paints and coatings that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D and the following chemical restrictions:
1. Flat Paints, Coatings, and Primers: VOC not more than 50 g/L.
2. Nonflat Paints, Coatings, and Primers: VOC not more than 150 g/L.
3. Anticorrosive and Antirust Paints Applied to Ferrous Metals: VOC not more than 250 g/L.
4. Clear Wood Finishes, Varnishes: VOC not more than 350 g/L.
5. Clear Wood Finishes, Lacquers: VOC not more than 550 g/L.
6. Floor Coatings: VOC not more than 100 g/L.
7. Sealers: waterproofing sealers: VOC not more than 250 g/L.
8. Sanding sealers: VOC not more than 275 g/L.
9. All other sealers: VOC not more than 200 g/L.
10. Shellacs, Clear: VOC not more than 730 g/L.
11. Shellacs, Pigmented: VOC not more than 550 g/L.
12. Stains: VOC not more than 250 g/L.
13. Primers, Sealers, and Undercoaters: VOC not more than 200 g/L.
14. Dry-Fog Coatings: VOC not more than 400 g/L.
15. Zinc-Rich Industrial Maintenance Primers: VOC not more than 340 g/L.
16. Pretreatment Wash Primers: VOC not more than 420 g/L.
17. Aromatic Compounds: Paints and coatings shall not contain more than 1.0 percent by weight total aromatic compounds (hydrocarbon compounds containing one or more benzene rings).
18. Restricted Components: Paints and coatings shall not contain any of the following:
   a. Acrolein.
   b. Acrylonitrile.
   c. Antimony.
   d. Benzene.
   e. Butyl benzyl phthalate.
   f. Cadmium.
   g. Di (2-ethylhexyl) phthalate.
   h. Di-n-butyl phthalate.
   i. Di-n-octyl phthalate.
   j. 1,2-dichlorobenzene.
   k. Diethyl phthalate.
   l. Dimethyl phthalate.
   m. Ethylbenzene.
   n. Formaldehyde.
   o. Hexavalent chromium.
   p. Isophorone.
   q. Lead.
   r. Mercury.
   s. Methyl ethyl ketone.
   t. Methyl isobutyl ketone.
   u. Methylene chloride.
   v. Naphthalene.
   w. Toluene (methylbenzene).
   x. 1,1,1-trichloroethane.
   y. Vinyl chloride.

C. Credit EQ 4.3: Carpet systems must meet or exceed the requirements of the Carpet and Rug Institute Green Label Indoor Air Quality Test Program, including total volatile organic compounds (TVOCs), 4-PC (4-Phenylcyclohexene), formaldehyde, and styrene.

D. Credit EQ 4.4: Do not use composite wood or agrifiber products or adhesives that contain urea-formaldehyde resin.

PART 3 - EXECUTION (Not Used)

END OF SECTION
SECTION 01 73 00

EXECUTION

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:
   2. Field engineering and surveying.
   3. Installation of the Work.
   4. Coordination of Owner-installed products.
   5. Progress cleaning.
   6. Starting and adjusting.
   7. Protection of installed construction.
   8. Correction of the Work.

B. Related Sections:
   1. Division 01 Section "Submittal Procedures" for submitting surveys.
   2. Division 01 Section “Cutting and Patching”.
   3. Division 01 Section "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, and final cleaning.
   4. Division 02 Section "Selective Structure Demolition" for demolition and removal of selected portions of the building.
   5. Division 07 Section "Penetration Firestopping" for patching penetrations in fire-rated construction.

1.02 INFORMATIONAL SUBMITTALS

A. Qualification Data: For land surveyor or professional engineer.

B. Certificates: Submit certificate signed by land surveyor or professional engineer certifying that location and elevation of improvements comply with requirements.

C. Landfill Receipts: Submit copy of receipts issued by a landfill facility, licensed to accept hazardous materials, for hazardous waste disposal.

D. Certified Surveys: Submit two copies signed by land surveyor or professional engineer.

E. Final Property Survey: Submit 10 copies showing the Work performed and record survey data.

1.03 QUALITY ASSURANCE

A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.
B. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.

C. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General: Comply with requirements specified in other Sections.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work.

1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; underground electrical services, and other utilities.

2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.

1. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:
   a. Description of the Work.
   b. List of detrimental conditions, including substrates.
   c. List of unacceptable installation tolerances.
   d. Recommended corrections.

2. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

3. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.

4. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.

5. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.
3.02 PREPARATION

A. Existing Utility Information: Furnish information to Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.

B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of the Contractor, submit a request for information to Architect according to requirements in Division 01 Section "Project Management and Coordination."

3.03 CONSTRUCTION LAYOUT

A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect promptly.

B. General: Engage a land surveyor or professional engineer to lay out the Work using accepted surveying practices.
   1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
   2. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
   3. Inform installers of lines and levels to which they must comply.
   4. Check the location, level and plumb, of every major element as the Work progresses.
   5. Notify Architect when deviations from required lines and levels exceed allowable tolerances.
   6. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.

C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.

D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.
E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect.

3.04 FIELD ENGINEERING

A. Identification: Owner will identify existing benchmarks, control points, and property corners.

B. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.
   1. Do not change or relocate existing benchmarks or control points without prior written approval of Architect. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Architect before proceeding.
   2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.

C. Benchmarks: Establish and maintain a minimum of two permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.
   1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
   2. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.
   3. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.

D. Certified Survey: On completion of foundation walls, major site improvements, and other work requiring field-engineering services, prepare a certified survey showing dimensions, locations, angles, and elevations of construction, new utilities, and sitework.

E. Final Property Survey: Engage a land surveyor or professional engineer to prepare a final property survey showing significant features (real property) for Project. Include on the survey a certification, signed by land surveyor or professional engineer, that principal metes, bounds, lines, and levels of Project are accurately positioned as shown on the survey.
   1. Show boundary lines, monuments, streets, site improvements and utilities, existing improvements and significant vegetation, adjoining properties, acreage, grade contours, and the distance and bearing from a site corner to a legal point.
   2. Recording: At Substantial Completion, have the final property survey recorded by or with authorities having jurisdiction as the official "property survey."
3.05 INSTALLATION

A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
   1. Make vertical work plumb and make horizontal work level.
   2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
   3. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.

B. Comply with manufacturer’s written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

E. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.

F. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

G. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.
   1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
   2. Allow for building movement, including thermal expansion and contraction.
   3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

H. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.

I. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.
3.06 OWNER-INSTALLED PRODUCTS

A. Site Access: Provide access to Project site for Owner's construction personnel.

B. Coordination: Coordinate construction and operations of the Work with work performed by Owner's construction personnel.
   1. Construction Schedule: Inform Owner of Contractor's preferred construction schedule for Owner's portion of the Work. Adjust construction schedule based on a mutually agreeable timetable. Notify Owner if changes to schedule are required due to differences in actual construction progress.
   2. Preinstallation Conferences: Include Owner's construction personnel at preinstallation conferences covering portions of the Work that are to receive Owner's work. Attend preinstallation conferences conducted by Owner's construction personnel if portions of the Work depend on Owner's construction.

3.07 PROGRESS CLEANING

A. General: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully according to Division 01 Section “Construction Waste Management and Disposal.”
   2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F (27 deg C).
   3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
      a. Utilize containers intended for holding waste materials of type to be stored.
   4. Coordinate progress cleaning for joint-use areas where more than one installer has worked.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work. Comply with Division 01 Section Construction Indoor Air Quality Management.
   1. Remove liquid spills promptly.
   2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. Comply with waste disposal requirements in Division 01 Section "Construction Waste Management and Disposal."

H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion. Comply with Division 01 Section Construction Indoor Air Quality Management.

I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

J. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.08 STARTING AND ADJUSTING

A. Coordinate startup and adjusting of equipment and operating components with requirements in Division 01 Section "General Commissioning Requirements."

B. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.

C. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.

D. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

E. Manufacturer's Field Service: Comply with qualification requirements in Division 01 Section "Quality Requirements."

3.09 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Comply with manufacturer's written instructions for temperature and relative humidity.
3.10 CORRECTION OF THE WORK

A. Repair or remove and replace defective construction. Restore damaged substrates and finishes.
   1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.

B. Restore permanent facilities used during construction to their specified condition.

C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.

E. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION
SECTION 01 73 29
CUTTING AND PATCHING

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes procedural requirements for cutting and patching.

B. See individual sections in all Divisions for specific requirements and limitations applicable to cutting and patching individual parts of the Work.

C. Related Sections:
   1. Division 01 Section “Sustainable Design Requirements” for product, adhesive and sealant requirements.
   2. Division 01 Section “Construction Waste Management and Disposal.”
   3. Division 01 Section “Construction Indoor Air Quality Management.”
   4. Division 02 Section “Selective Structure Demolition” for cutting required as part of demolition activities.
   5. Division 07 Section "Penetration Firestopping" for patching fire-rated construction.

D. Cutting and Patching is distinct from but related to Selective Demolition, which is defined elsewhere.

E. Cutting and Patching is used to refer to the work required to make penetrations or openings in materials or assemblies for the purpose of completing other work such as the installation of pipes, wires, accessories, assemblies, etc., and the repairs to those materials.

1.02 DEFINITIONS

A. Cutting: Removal of in-place construction necessary to permit installation or performance of other work.

B. Patching: Fitting and repair work required to restore construction to original conditions after installation of other work.

1.03 SUBMITTALS

A. Cutting and Patching Proposal: Submit a proposal describing procedures at least 10 days before the time cutting and patching will be performed, requesting approval to proceed. Include the following information:
   1. Extent: Describe cutting and patching, show how they will be performed, and indicate why they cannot be avoided.
   2. Changes to In-Place Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building’s appearance and other significant visual elements.
   3. Products: List products to be used and firms or entities that will perform the Work.
   4. Dates: Indicate when cutting and patching will be performed.
5. Utility Services and Mechanical/Electrical Systems: List services/systems that cutting and patching procedures will disturb or affect. List services/systems that will be relocated and those that will be temporarily out of service. Indicate how long services/systems will be disrupted.

6. Structural Elements: Where cutting and patching involve adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with original structure.

7. Architect’s Approval: Obtain approval of cutting and patching proposal before cutting and patching. Approval does not waive right to later require removal and replacement of unsatisfactory work.

1.04 QUALITY ASSURANCE

A. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.
   1. When cutting and patching structural elements, notify Architect of locations and details of cutting and await directions from the Architect before proceeding. Shore, brace, and support structural element during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection
      a. Core drilling of concrete beams.
      b. Core drilling of precast concrete T’s.

B. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety. Operational elements include the following:
   1. Primary operational systems and equipment.
   2. Fire separation assemblies.
   3. Air or smoke barriers.
   4. Fire-suppression systems.
   5. Mechanical systems piping and ducts.
   6. Control systems.
   7. Communication systems.
   8. Conveying systems.
   9. Electrical wiring systems.
   10. Operating systems of special construction.

C. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety. Other construction elements include but are not limited to the following:
   1. Water, moisture, or vapor barriers.
   2. Membranes and flashings.
   3. Precast concrete panels.
   4. Exterior curtain-wall construction.
   5. Equipment supports.
6. Piping, ductwork, vessels, and equipment.
7. Noise- and vibration-control elements and systems.

D. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

E. Cutting and Patching Conference: Before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

1.05 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials so as not to void existing warranties.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General: Comply with requirements specified in other Sections.
   1. For projects requiring compliance with sustainable design and construction practices and procedures, utilize products for patching that comply with requirements of Division 01 Section "Sustainable Design Requirements."

B. In-Place Materials: Use materials identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
   1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to the Architect for the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.
   1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with in-place finishes or primers.
   2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.
3.02 PREPARATION

A. Temporary Support: Provide temporary support of work to be cut.

B. Protection: Protect in-place construction from water staining or other damage due to cutting operations.

C. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

D. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

E. Comply with Division 01 Section “Construction Indoor Air Quality Management” for pathway interruption and HVAC protection measures.

3.03 UTILITY AND BUILDING SYSTEM INTERRUPTIONS

A. Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to minimize interruption to occupied areas.

B. Except as specifically indicated otherwise in the Contract Documents, interruption of mechanical and electrical services or building system operation shall be prohibited without the prior approval of the Architect and/or the Owner’s Project Manager.

C. A minimum of ten days notice must be given prior to any utility or building system shutdown.

D. Where interruption of the building fire alarm system is required for construction work, the Contractor shall coordinate requirements with the Owner’s Project Manager and the local fire department. The Contractor shall coordinate activities and pay for any fire watches required by the local fire department.

3.04 CUTTING AND PATCHING

A. Cutting and Patching, General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Temporary Support: Provide temporary support of work to be cut.

C. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations. Comply with Division 01 Section “Sustainable Design Requirements.”
D. Adjacent Occupied Areas: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching in accordance with requirements of Division 01 Section "Summary."

E. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to prevent interruption to occupied areas.

F. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
   1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
   2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
   3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
   4. Excavating and Backfilling: Comply with requirements in applicable Division 31 Sections where required by cutting and patching operations.
   5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
   6. Proceed with patching after construction operations requiring cutting are complete.

G. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.
   1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
   2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.
      a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
      b. Restore damaged pipe covering to its original condition.
   3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
      a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.

5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition.

H. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

I. Comply with Division 01 “Section Construction Waste Management and Disposal.”

3.05 PERFORMANCE

A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.

2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.

3. Concrete and/or Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.

4. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.

5. Proceed with patching after construction operations requiring cutting are complete.

C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections.

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.

2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.

3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and
wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.

4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.

5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition.

D. Cleaning: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.

3.06 SCHEDULING CUTTING AND PATCHING

A. Cutting and patching operations affecting the weather-tightness of structures shall be coordinated to provide for a minimum period of exposure to weather.

B. Cutting and patching operations affecting the security of the building shall be coordinated so that temporary construction measures can be completed to ensure that the building security is not compromised in any manner at any time.

END OF SECTION
SECTION 01 74 15
CONSTRUCTION AND FINAL CLEANING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Facilities, equipment, and labor for cleaning and waste disposal during construction and for final cleaning prior to occupancy or acceptance.

B. References:

1.02 DEFINITIONS

A. Environmentally Preferable Product: A product certified as such by a Type 1 (i.e., third-party) environmental label that was developed in accordance with the ISO 14024 Environmental Labeling Standard. Alternatively, a product may be designated as environmentally preferable by an established and legitimate, nationally-recognized program developed with the purpose of identifying environmentally preferable products. The program must not have any financial interest or stake in sales of the product, or other conflict of interest. Such designation must be based on consideration of human health and safety, ecological toxicity, other environmental impacts, and resource conservation, as appropriate, for the product and its packaging, on a life cycle basis. Product criteria must distinguish market leadership for that product category, and be publicly available and transparent.

1.03 ENVIRONMENTAL REQUIREMENTS

A. Pollution Control: Conduct clean-up and disposal operations to comply with applicable anti-pollution laws and local ordinances.

1.04 SUBMITTALS

A. Building Specific Green Cleaning Plan: The Cleaning Service Provider shall submit a building-specific Green Cleaning Plan that comprehensively describes the methods by which the facility is to be cleaned effectively for construction progress and final cleaning while protecting human health and the environment.

1.05 COMMUNICATIONS REQUIREMENTS

A. Cleaning Service Provider shall establish means for communicating cleaning strategy between cleaning personnel, Contractor, Owner, and others involved in the construction process. Communications plan shall follow that outlined in “GS-37 - Green Seal Environmental Standard for Cleaning Services”.

CONSTRUCTION AND FINAL CLEANING
01 74 15 - 1
B. In addition to typical cleaning concerns, the Green Cleaning Plan shall:
   1. Define a comprehensive communications plan as established with the Owner. The plan shall describe procedures for cleaning personnel to communicate with building management and occupants, as well as a system for providing feedback from building management and occupants.
   2. Develop and implement a floor maintenance plan, consistent with manufacturers’ maintenance recommendations, to extend the life of flooring through routine, periodic, and restorative cleaning operations.
   3. Determine schedules of routine cleaning operations, activities performed periodically, equipment operation and maintenance, cleaning inspections, and accident preparedness plans.
   4. Schedule of cleaning operations detailing the minimum frequency required to clean and maintain the area to a level that adequately protects human health and the environment.

PART 2 - PRODUCTS

2.01 CLEANING MATERIALS

   A. Use of Environmentally Preferable Products is required. Cleaning products shall be listed in “GS-37 - Green Seal Environmental Standard for Cleaning Services” and certified as significantly less damaging to the environment than

   B. Use only cleaning materials recommended by manufacturer of surface to be cleaned.

   C. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.
      1. Use no sweeping compounds on concrete floors that will leave residue affecting finish flooring materials.

PART 3 - EXECUTION

3.01 CONSTRUCTION CLEANING

   A. Cleaning procedures shall follow those outlined in “GS-37 - Green Seal Environmental Standard for Cleaning Services”.

   B. Waste Disposal: Provide central trash collection facility for use of all trades and dispose of collected trash at least every 14 days. Each Contractor and Subcontractor is responsible for cleaning his work and removing his trash to the central collection point daily. On-site burning is not permitted. Do not allow trash to be blown away or to litter the site or adjacent areas. Collect waste from construction areas and elsewhere daily. Comply with requirements of NFPA 241 for removal of combustible waste material and debris. Enforce requirements strictly. Do not hold materials more than 7 days during normal weather or 3 days when the temperature is expected to rise above 80 degrees F. Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly.
C. Debris generated by demolition activity shall be removed from the job site on the same day it is generated.

D. In addition to the requirements for clean-up as specified in the General Conditions, the Contractor shall remove to the Owner’s satisfaction all asphalt or concrete spilled on or around the buildings.

E. Dispose of all rubbish and debris according to Division 01 Section Construction Waste Management and Disposal.

F. Cleaning Procedures:
   1. Clean each unit or element as it is substantially completed for each area.
   2. Replace damaged items and restore superficial damage.
   3. Repeat cleaning operations during construction as required to maintain and protect work.
   4. Maintain building site and adjacent public streets free of trash, debris, mud, and accumulations of waste materials.
   5. Remove and dispose of contaminated earth, waste concrete, masonry and mortar.
   6. Scrape and vacuum interiors when ready to receive paints, floor coverings, and finishes.

3.02 FINAL CLEANING

A. Final clean-up should be performed by independent green cleaning service using cleaning products that meet the Green Seal GS-37 standard, floor cleaners complying with CA Code of Regulations for maximum VOC content, disposable paper products, supplies and trash bags meeting the minimum requirements of US EPA’s Comprehensive Procurement Guidelines, and cleaners should be concentrated where possible.

B. Perform final cleaning just prior to final completion inspection.

C. Use experienced workers or professional cleaners for final cleaning.

D. Clean all surfaces interior and exterior. Remove waste concrete. Rake exterior areas, remove trash and debris. Clean and polish glass, hardware, casework, counters, fixtures and accessories. Perform all cleaning by suitable means just prior to final inspection and occupancy.

E. Clean each surface or unit to the condition expected in a normal, commercial building cleaning and maintenance program.

F. Remove labels which are not required as permanent labels.

G. Remove grease, dust, dirt, stains, films, fingerprints, and other noticeable distracting substances.

H. Clean all transparent materials, including mirrors and glass in doors and windows. Remove glazing compound and other substances that are noticeable vision-impairing material. Replace chipped or broken glass and other damaged transparent materials.
I. Except as otherwise indicated, avoid disturbance of natural weathering of exterior surfaces. Restore reflective surfaces to original reflective condition.

J. Wipe surfaces of mechanical and electrical equipment clean, including elevator equipment and similar equipment in addition to that specified in Divisions 22, 23, 26, and 27; remove excess lubrication and other substances.

K. Remove debris and surface dust from limited-access spaces including roofs, plenums, ducts, chases, shafts, trenches, equipment vaults, manholes, attic and similar spaces.


M. Clean plumbing fixtures to a sanitary condition, free of stains including those resulting from water exposure.

N. Repair, patch, and touch-up marred surfaces to match adjacent finishes.

O. Broom clean paved surfaces; rake clean other surfaces or grounds.

P. Clean light fixtures and lamps so as to function with full efficiency, by electrical Installer.

Q. Replace air supply unit filters if units were operated during construction, by mechanical Installer.

R. Clean ducts, blowers, and coils if air supply units were operated without filters during construction, by mechanical Installer.

S. Compliance: Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the Owners property. Do not discharge volatile, harmful or dangerous materials into drainage systems. Remove waste materials from the site and dispose of in a lawful manner.

1. Where extra materials of value remain after completion of associated Work have become the Owner's property, arrange for disposition of these materials as directed by Owner.

2. Remove waste materials from the site and dispose of according to Division 01 Section “Construction Waste Management and Disposal.”

T. Maintain cleaned conditions until the building, or portion thereof, is occupied or accepted by Owner.

3.03 TRAINING

A. Cleaning contractor shall provide training session to train Owner’s operations staff in green cleaning methods and materials.

1. Training program shall follow requirements of Division 01 Section “Demonstration and Training”.

END OF SECTION
## FORM CWM-1: CONSTRUCTION WASTE IDENTIFICATION

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<th>EST. WASTE - % (B)</th>
<th>TOTAL EST. QUANTITY OF WASTE* (C = A x B)</th>
<th>EST. VOLUME CY (CM)</th>
<th>EST. WEIGHT TONS (TONNES)</th>
<th>REMARKS AND ASSUMPTIONS</th>
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* Insert units of measure.
### FORM CWM-2: DEMOLITION WASTE IDENTIFICATION

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# FORM CWM-3: CONSTRUCTION WASTE REDUCTION WORK PLAN

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SECTION 01 74 19

CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes administrative and procedural requirements for the following:
   1. Salvaging nonhazardous demolition and construction waste.
   2. Recycling nonhazardous demolition and construction waste.
   3. Disposing of nonhazardous demolition and construction waste.

B. Related Sections:
   1. Division 02 Section "Selective Structure Demolition" for disposition of waste resulting from partial demolition of buildings, structures, and site improvements.
   2. Division 31 Section "Site Clearing" for disposition of waste resulting from site clearing and removal of above- and below-grade improvements.

1.02 DEFINITIONS

A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.

B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.

C. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.

D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.

E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.

F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.
1.03 PERFORMANCE REQUIREMENTS

A. General: Achieve end-of-Project rates for salvage/recycling of 50 percent by weight of total non-hazardous solid waste generated by the Work. Achieve end-of-Project rate of 75% or 90% as practicable. Practice efficient waste management in the use of materials in the course of the Work. Use all reasonable means to divert construction and demolition waste from landfills and incinerators. Facilitate recycling and salvage of materials, including the following:

1. Demolition Waste:
   a. Asphalitic concrete paving.
   b. Concrete.
   c. Concrete reinforcing steel.
   d. Structural and miscellaneous steel.
   e. Roofing.
   f. Metal studs.
   g. Gypsum board.
   h. Acoustical tile and panels.
   i. Carpet.
   j. Equipment.
   k. Cabinets.
   l. Plumbing fixtures.
   m. Piping.
   n. Supports and hangers.
   o. Valves.
   p. Sprinklers.
   q. Mechanical equipment.
   r. Refrigerants.
   s. Electrical conduit.
   t. Copper wiring.
   u. Lighting fixtures.
   v. Lamps.
   w. Ballasts.
   x. Electrical devices.
   y. Switchgear and panelboards.
   z. Transformers.

2. Construction Waste:
   a. Site-clearing waste.
   b. Lumber.
   c. Wood sheet materials.
   d. Wood trim.
   e. Metals.
   f. Roofing.
   g. Insulation.
   h. Carpet.
   i. Gypsum board.
   j. Piping.
   k. Electrical conduit.
I. Packaging: Regardless of salvage/recycle goal indicated in paragraph above, salvage or recycle 100 percent of the following uncontaminated packaging materials:
   1) Paper.
   2) Cardboard.
   3) Boxes.
   4) Plastic sheet and film.
   5) Polystyrene packaging.
   7) Plastic pails.

1.04 ACTION SUBMITTALS

A. Waste Management Plan: Submit plan within 7 days of date established for the Notice to Proceed.

1.05 INFORMATIONAL SUBMITTALS

A. Waste Reduction Progress Reports: Concurrent with each Application for Payment, submit report. Use Form CWM-7 for construction waste and Form CWM-8 for demolition waste. Include the following information:
   1. Material category.
   2. Generation point of waste.
   3. Total quantity of waste in tons.
   4. Quantity of waste salvaged, both estimated and actual, in tons or cubic feet.
   5. Quantity of waste recycled, both estimated and actual, in tons or cubic feet.
   6. Total quantity of waste recovered (salvaged plus recycled) in tons or cubic feet.
   7. Total quantity of waste recovered (salvaged plus recycled) as a percentage of total waste.

B. Waste Reduction Calculations: Before request for Substantial Completion, submit calculated end-of-Project rates for salvage, recycling, and disposal as a percentage of total waste generated by the Work, measured by weight or volume.

C. Records of Donations: Indicate receipt and acceptance of salvageable waste donated to individuals and organizations. Indicate whether organization is tax exempt.

D. Records of Sales: Indicate receipt and acceptance of salvageable waste sold to individuals and organizations. Indicate whether organization is tax exempt.

E. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

F. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.
G. LEED Submittal: LEED letter template for Credit MR 2.1 and 2.2, signed by Contractor, tabulating total waste material, quantities diverted and means by which it is diverted, and statement that requirements for the credit have been met.

H. Qualification Data: For waste management coordinator and refrigerant recovery technician.

I. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

1.06 QUALITY ASSURANCE

A. Waste Management Coordinator Qualifications: Experienced firm, with a record of successful waste management coordination of Projects with similar requirements, that employs a LEED Accredited Professional, certified by USGBC, as waste management coordinator. Waste management coordinator may also serve as LEED coordinator.

B. Refrigerant Recovery Technician Qualifications: Certified by EPA-approved certification program.

C. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.

D. Waste Management Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to waste management including, but not limited to, the following:

1. Review and discuss waste management plan including responsibilities of waste management coordinator.
2. Review requirements for documenting quantities of each type of waste and its disposition.
3. Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.
4. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
5. Review waste management requirements for each trade.

1.07 WASTE MANAGEMENT PLAN

A. General: Develop a waste management plan according to ASTM E 1609 and requirements of this Section. Plan shall consist of waste identification, waste reduction work plan, and cost/revenue analysis. Distinguish between demolition and construction waste. Indicate quantities by weight or volume, but use same units of measure throughout waste management plan.
B. Waste Identification: Indicate anticipated types and quantities of demolition site-clearing and construction waste generated by the Work. Use Form CWM-1 for construction waste and Form CWM-2 for demolition waste. Include estimated quantities and assumptions for estimates.

C. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator. Use Form CWM-3 for construction waste and Form CWM-4 for demolition waste. Include points of waste generation, total quantity of each type of waste, quantity for each means of recovery, and handling and transportation procedures.
   1. Salvaged Materials for Reuse: For materials that will be salvaged and reused in this Project, describe methods for preparing salvaged materials before incorporation into the Work.
   2. Salvaged Materials for Sale: For materials that will be sold to individuals and organizations, include list of their names, addresses, and telephone numbers.
   3. Salvaged Materials for Donation: For materials that will be donated to individuals and organizations, include list of their names, addresses, and telephone numbers.
   4. Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.
   5. Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number of each landfill and incinerator facility.
   6. Handling and Transportation Procedures: Include method that will be used for separating recyclable waste including sizes of containers, container labeling, and designated location on Project site where materials separation will be located.

D. Cost/Revenue Analysis: Indicate total cost of waste disposal as if there was no waste management plan and net additional cost or net savings resulting from implementing waste management plan. Use Form CWM-5 for construction waste and Form CWM-6 for demolition waste. Include the following:
   1. Total quantity of waste.
   2. Estimated cost of disposal (cost per unit). Include hauling and tipping fees and cost of collection containers for each type of waste.
   3. Total cost of disposal (with no waste management).
   4. Revenue from salvaged materials.
   5. Revenue from recycled materials.
   7. Savings in hauling and tipping fees that are avoided.
   8. Handling and transportation costs. Include cost of collection containers for each type of waste.
   9. Net additional cost or net savings from waste management plan.
PART 3 - EXECUTION

3.01 PLAN IMPLEMENTATION

A. General: Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.
   1. Comply with Division 01 Section "Temporary Facilities and Controls" for operation, termination, and removal requirements.

B. Waste Management Coordinator: Engage a waste management coordinator to be responsible for implementing, monitoring, and reporting status of waste management work plan.

C. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work occurring at Project site.
   1. Distribute waste management plan to everyone concerned within three days of submittal return.
   2. Distribute waste management plan to entities when they first begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal.

D. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
   1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.
   2. Comply with Division 01 Section "Temporary Facilities and Controls" for controlling dust and dirt, environmental protection, and noise control.

3.02 SALVAGING DEMOLITION WASTE

A. Salvaged Items for Reuse in the Work: Salvage items for reuse and handle as follows:
   1. Clean salvaged items.
   2. Pack or crate items after cleaning. Identify contents of containers.
   3. Store items in a secure area until installation.
   4. Protect items from damage during transport and storage.
   5. Install salvaged items to comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make items functional for use indicated.

B. Salvaged Items for Sale and Donation: Not permitted on Project site.
C. Salvaged Items for Owner's Use: Salvage items for Owner's use and handle as follows:
   1. Clean salvaged items.
   2. Pack or crate items after cleaning. Identify contents of containers.
   3. Store items in a secure area until delivery to Owner.
   4. Transport items to Owner’s storage area designated by Owner.
   5. Protect items from damage during transport and storage.

D. Doors and Hardware: Brace open end of door frames. Except for removing door closers, leave
doors hardware attached to doors.

E. Equipment: Drain tanks, piping, and fixtures. Seal openings with caps or plugs. Protect
equipment from exposure to weather.

F. Plumbing Fixtures: Separate by type and size.

G. Lighting Fixtures: Separate lamps by type and protect from breakage.

H. Electrical Devices: Separate switches, receptacles, switchgear, transformers, meters,
panelboards, circuit breakers, and other devices by type.

3.03 RECYCLING DEMOLITION AND CONSTRUCTION WASTE, GENERAL

A. General: Recycle paper and beverage containers used by on-site workers.

B. Recycling Incentives: Revenues, savings, rebates, tax credits, and other incentives received for
recycling waste materials shall accrue as follows:
   1. LEED Credits and tax advantages shall accrue to Owner.
   2. Revenues shall accrue to Contractor.

C. Preparation of Waste: Prepare and maintain recyclable waste materials according to recycling
or reuse facility requirements. Maintain materials free of dirt, adhesives, solvents, petroleum
contamination, and other substances deleterious to the recycling process.

D. Procedures: Separate recyclable waste from other waste materials, trash, and debris.
Separate recyclable waste by type at Project site to the maximum extent practical according to
approved construction waste management plan.
   1. Provide appropriately marked containers or bins for controlling recyclable waste until
they are removed from Project site. Include list of acceptable and unacceptable
materials at each container and bin.
      a. Inspect containers and bins for contamination and remove contaminated
         materials if found.
   2. Stockpile processed materials on-site without intermixing with other materials. Place,
grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
   3. Stockpile materials away from construction area. Do not store within drip line of
remaining trees.
   4. Store components off the ground and protect from the weather.
5. Remove recyclable waste off Owner's property and transport to recycling receiver or processor.

3.04 RECYCLING DEMOLITION WASTE

A. Asphaltic Concrete Paving: Break up and transport paving to asphalt-recycling facility.

B. Wood Materials: Sort and stack members according to size, type, and length. Separate lumber, panel products, and treated wood materials.

C. Metals: Separate metals by type.
   1. Structural Steel: Stack members according to size, type of member, and length.
   2. Remove and dispose of bolts, nuts, washers, and other rough hardware.

D. Gypsum Board: Stack large clean pieces on wood pallets or in container and store in a dry location. Remove edge trim and sort with other metals. Remove and dispose of fasteners.

E. Acoustical Ceiling Panels and Tile: Stack large clean pieces on wood pallets and store in a dry location.

F. Metal Suspension System: Separate metal members including trim, and other metals from acoustical panels and tile and sort with other metals.

G. Carpet: Roll large pieces tightly after removing debris, trash, adhesive, and tack strips.
   1. Store clean, dry carpet in a closed container or trailer provided by Carpet Reclamation Agency or carpet recycler.

H. Piping: Reduce piping to straight lengths and store by type and size. Separate supports, hangers, valves, sprinklers, and other components by type and size.

I. Conduit: Reduce conduit to straight lengths and store by type and size.

3.05 RECYCLING CONSTRUCTION WASTE

A. Packaging:
   1. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
   3. Pallets: As much as possible, require deliveries using pallets to remove pallets from Project site. For pallets that remain on-site, break down pallets into component wood pieces and comply with requirements for recycling wood.
   4. Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.

B. Site-Clearing Wastes: Chip brush, branches, and trees on-site or at landfill facility.
   1. Comply with requirements in Division 32 Section "Planting" for use of chipped organic waste as organic mulch.
C. Wood Materials:
1. Clean Cut-Offs of Lumber: Grind or chip into small pieces.
2. Clean Sawdust: Bag sawdust that does not contain painted or treated wood.
   a. Comply with requirements in Division 32 Section "Planting." for use of clean sawdust as organic mulch.

D. Gypsum Board: Stack large clean pieces on wood pallets or in container and store in a dry location.
1. Clean Gypsum Board: Grind scraps of clean gypsum board using small mobile chipper or hammer mill. Screen out paper after grinding.
   a. Comply with requirements in Division 32 Section "Planting." for use of clean ground gypsum board as inorganic soil amendment.

3.06 DISPOSAL OF WASTE

A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.
   1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
   2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. Burning: Do not burn waste materials.

C. Disposal: Transport waste materials off Owner's property and legally dispose of them.

3.07 ATTACHMENTS

A. The attached Construction Waste Management sample forms attached may be provided as supplementary documentation:
   1. Form CWM-1 for construction waste identification.
   2. Form CWM-2 for demolition waste identification.
   3. Form CWM-3 for construction waste reduction work plan.
   4. Form CWM-4 for demolition waste reduction work plan.
   5. Form CWM-5 cost/revenue analysis of construction waste reduction work plan.
   6. Form CWM-6 cost/revenue analysis of demolition waste reduction work plan.
   7. Form CWM-7 for construction waste.
   8. Form CWM-8 for demolition waste.

END OF SECTION
SECTION 01 77 00
CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
1. Substantial Completion procedures.
2. Final completion procedures.
3. Warranties.
4. Final cleaning.

B. Related Sections:
1. Division 01 Section "Execution" for progress cleaning of Project site.
2. Division 01 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
3. Division 01 Section "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
4. Division 01 Section “Construction and Final Cleaning” for green cleaning requirements.
5. Division 01 Section "Demonstration and Training" for requirements for instructing Owner's personnel.
6. Division 01 Section “Commissioning” for system operation and maintenance training and system functional testing.
7. Division 01 Section “Construction Indoor Air Quality Management” for HVAC cleanup.
8. Divisions 02 through 49 Sections for specific closeout and special cleaning requirements for the Work in those Sections.

1.02 DEFINITIONS

A. See General Conditions for definition of Substantial Completion.

1.03 NOTICE OF COMPLETION

A. See General Conditions Article 41 – A for Notice of Completion requirements.

1.04 FINAL INSPECTION

A. See General Conditions Article 41 – B for Final Inspection procedure.

B. Preliminary Procedures: Before requesting final inspection for determining final completion, complete the following:
1. Submit a final Application for Payment according to Division 01 Section "Payment Procedures."
2. Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. The certified
CLOSEOUT PROCEDURES
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copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
4. Submit pest-control final inspection report and warranty.
5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings.

C. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.05 SUBSTANTIAL COMPLETION

A. See General Conditions Article 41 – C for Substantial Completion procedure.

B. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete with request.
1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
2. Advise Owner of pending insurance changeover requirements.
3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
5. Prepare and submit Project Record Documents, operation and maintenance manuals, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.
6. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer’s name and model number where applicable.
7. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner’s personnel of changeover in security provisions.
8. Complete startup testing of systems.
10. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
11. Advise Owner of changeover in heat and other utilities.
12. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
13. Complete final cleaning requirements, including touchup painting in accordance with Division 09 Section “Painting”.
14. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
1.06 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. See General Conditions Article 41 – C for punch list requirements.

B. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction. Use form acceptable to Owner and Architect.
1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.
2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
3. Include the following information at the top of each page:
   a. Project name.
   b. Date.
   c. Name of Architect.
   d. Name of Contractor.
   e. Page number.

4. Submit list of incomplete items in the following format:
   a. PDF electronic file.
   b. Three paper copies of product schedule or list, unless otherwise indicated.
      Architect will return one copy.

1.07 WARRANTIES

A. Submittal Time: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.

B. Partial Occupancy: Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.

C. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.
1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
4. Scan warranties and bonds and assemble complete warranty and bond submittal package into a single indexed electronic PDF file with links enabling navigation to each item. Provide table of contents at beginning of document.
D. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.
   1. Use cleaning products that meet Green Seal GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

PART 3 - EXECUTION

3.01 FINAL CLEANING

A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Perform “green cleaning” as specified in Division 01 Section “Construction and Final Cleaning.”

C. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
   1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:
      a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
      b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
      c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
      d. Remove tools, construction equipment, machinery, and surplus material from Project site.
      e. Remove snow and ice to provide safe access to building.
      f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
      g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
      h. Sweep concrete floors broom clean in unoccupied spaces.
      i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.
j. Clean transparent materials, including mirrors and glass in doors and windows.
   Remove glazing compounds and other noticeable, vision-obscuring materials.
   Replace chipped or broken glass and other damaged transparent materials.
   Polish mirrors and glass, taking care not to scratch surfaces.

k. Remove labels that are not permanent.

l. Touch up and otherwise repair and restore marred, exposed finishes and
   surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or
   restored or that already show evidence of repair or restoration.
   1) Do not paint over "UL" and other required labels and identification,
      including mechanical and electrical nameplates.

m. Wipe surfaces of mechanical and electrical equipment, elevator equipment, and
   similar equipment. Remove excess lubrication, paint and mortar droppings, and
   other foreign substances.

n. Replace parts subject to operating conditions during construction that may
   impede operation or reduce longevity.

o. Clean plumbing fixtures to a sanitary condition, free of stains, including stains
   resulting from water exposure.

p. After construction is complete, but prior to building flush-out, replace air filters
   with MERV 13 air filters.

q. Clean ducts, blowers, and coils if units were operated without filters during
   construction or that display contamination with particulate matter upon
   inspection.
   1) Clean HVAC system in compliance with NADCA Standard 1992-01. Provide
      written report upon completion of cleaning.

r. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency.
   Replace burned-out bulbs, and those noticeably dimmed by hours of use, and
   defective and noisy starters in fluorescent and mercury vapor fixtures to comply
   with requirements for new fixtures.

s. Leave Project clean and ready for occupancy.

D. Pest Control: Engage an experienced, licensed exterminator to make a final inspection and rid
   Project of rodents, insects, and other pests. Prepare a report.

E. Construction Waste Disposal: Comply with waste disposal requirements in Division 01 Section
   "Construction Waste Management and Disposal."

END OF SECTION
SECTION 01 78 23
OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
   1. Operation and maintenance documentation directory.
   2. Emergency manuals.
   3. Operation manuals for systems, subsystems, and equipment.
   4. Product maintenance manuals.
   5. Systems and equipment maintenance manuals.

B. Related Sections:
   1. Division 01 Section "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.
   2. Division 01 Section "Commissioning" for verification and compilation of data into operation and maintenance manuals.
   3. Division 01 Section “Sustainable Design Requirements” for LEED submittal and documentation requirements.
   4. Divisions 02 through 49 Sections for specific operation and maintenance manual requirements for the Work in those Sections.

1.02 DEFINITIONS

A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.

B. Subsystem: A portion of a system with characteristics similar to a system.

1.03 CLOSEOUT SUBMITTALS

A. Manual Content: Operations and maintenance manual content is specified in individual specification sections to be reviewed at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.
   1. Where applicable, clarify and update reviewed manual content to correspond to modifications and field conditions.

B. Format: Submit operations and maintenance manuals in the following format:
      a. Name each indexed document file in composite electronic index with applicable item name. Include a complete electronically-linked operation and maintenance directory.
      b. Enable inserted reviewer comments on draft submittals.
2. Three paper copies. Include a complete operation and maintenance directory. Enclose title pages and directories in clear plastic sleeves. Architect will return one copy.

C. Initial Manual Submittal: Submit draft copy of each manual at least 30 days before commencing demonstration and training. Architect and Commissioning Agent will comment on whether general scope and content of manual are acceptable.

D. Final Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least 15 days before commencing demonstration and training. Architect and Commissioning Agent will return copy with comments.

1. Correct or modify each manual to comply with Architect's and Commissioning Agent's comments. Submit copies of each corrected manual within 15 days of receipt of Architect's and Commissioning Agent's comments and prior to commencing demonstration and training.

PART 2 - PRODUCTS

2.01 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY

A. Organization: Include a section in the directory for each of the following:

1. List of documents.
2. List of systems.
3. List of equipment.
4. Table of contents.

B. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.

C. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.

D. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.

E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

2.02 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS

A. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:

1. Title page.
2. Table of contents.
B. Title Page: Include the following information:
   1. Subject matter included in manual.
   2. Name and address of Project.
   3. Name and address of Owner.
   4. Date of submittal.
   5. Name and contact information for Contractor.
   6. Name and contact information for Architect.
   7. Name and contact information for Commissioning Agent.
   8. Names and contact information for major consultants to the Architect that designed the systems contained in the manuals.
   9. Cross-reference to related systems in other operation and maintenance manuals.

C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
   1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.

D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.

E. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.
   1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
   2. File Names and Bookmarks: Enable bookmarking of individual documents based upon file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel upon opening file.

F. Manuals, Paper Copy: Submit manuals in the form of hard copy, bound and labeled volumes.
   1. Binders: Heavy-duty, three-ring, vinyl-covered, loose-leaf or post-type binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.
      a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.
b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents. Indicate volume number for multiple-volume sets.

2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section of the manual. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.

3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software storage media for computerized electronic equipment.


5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
   a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
   b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

2.03 EMERGENCY MANUALS

A. Content: Organize manual into a separate section for each of the following:
   1. Type of emergency.
   2. Emergency instructions.
   3. Emergency procedures.

B. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:
   1. Fire.
   2. Flood.
   5. Power failure.
   7. System, subsystem, or equipment failure.
   8. Chemical release or spill.

C. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.

D. Emergency Procedures: Include the following, as applicable:
   1. Instructions on stopping.
   2. Shutdown instructions for each type of emergency.
   3. Operating instructions for conditions outside normal operating limits.
   4. Required sequences for electric or electronic systems.
   5. Special operating instructions and procedures.
2.04 OPERATION MANUALS

A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:
   2. Performance and design criteria if Contractor is delegated design responsibility.
   3. Operating standards.
   4. Operating procedures.
   5. Operating logs.
   6. Wiring diagrams.
   7. Control diagrams.
   8. Piped system diagrams.
   9. Precautions against improper use.
  10. License requirements including inspection and renewal dates.

B. Descriptions: Include the following:
   1. Product name and model number. Use designations for products indicated on Contract Documents.
   2. Manufacturer’s name.
   3. Equipment identification with serial number of each component.
   4. Equipment function.
   5. Operating characteristics.
   6. Limiting conditions.
   7. Performance curves.
   8. Engineering data and tests.
   9. Complete nomenclature and number of replacement parts.

C. Operating Procedures: Include the following, as applicable:
   1. Startup procedures.
   2. Equipment or system break-in procedures.
   3. Routine and normal operating instructions.
   4. Regulation and control procedures.
   5. Instructions on stopping.
   7. Seasonal and weekend operating instructions.
   8. Required sequences for electric or electronic systems.
   9. Special operating instructions and procedures.

D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.

E. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.
2.05 PRODUCT MAINTENANCE MANUALS

A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.

B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.

C. Product Information: Include the following, as applicable:
   1. Product name and model number.
   2. Manufacturer's name.
   3. Color, pattern, and texture.
   5. Reordering information for specially manufactured products.

D. Maintenance Procedures: Include manufacturer's written recommendations and the following:
   1. Inspection procedures.
   2. Types of cleaning agents to be used and methods of cleaning.
   3. List of cleaning agents and methods of cleaning detrimental to product.
   4. Schedule for routine cleaning and maintenance.
   5. Repair instructions.

E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
   1. Include procedures to follow and required notifications for warranty claims.

2.06 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.

B. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.
C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:
   1. Standard maintenance instructions and bulletins.
   2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
   3. Identification and nomenclature of parts and components.
   4. List of items recommended to be stocked as spare parts.

D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:
   1. Test and inspection instructions.
   2. Troubleshooting guide.
   3. Precautions against improper maintenance.
   4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
   5. Aligning, adjusting, and checking instructions.
   6. Demonstration and training video recording, if available.

E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
   1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
   2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.

F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.

G. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.

H. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
   1. Include procedures to follow and required notifications for warranty claims.

PART 3 - EXECUTION

3.01 MANUAL PREPARATION

A. Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals.

B. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.
C.  Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.

D.  Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.
   1.  Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
   2.  Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.

E.  Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
   1.  Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.

F.  Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.
   1.  Do not use original project record documents as part of operation and maintenance manuals.
   2.  Comply with requirements of newly prepared record Drawings in Division 01 Section "Project Record Documents."

G.  Comply with Division 01 Section "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

END OF SECTION
SECTION 01 78 39

PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes administrative and procedural requirements for project record documents, including the following:
   1. Record Drawings.
   2. Record Specifications.
   3. Record Product Data.
   4. Miscellaneous record submittals.

B. Related Sections:
   1. Division 01 Section "Execution" for final property survey.
   2. Division 01 Section "Closeout Procedures" for general closeout procedures.
   3. Division 01 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
   4. Divisions 02 through 49 Sections for specific requirements for project record documents of the Work in those Sections.

1.02 CLOSEOUT SUBMITTALS

A. Record Drawings: Comply with the following:
   1. Number of Copies: Submit copies of record Drawings as follows:
      a. Initial Submittal: Submit one paper copy set or PDF electronic files of marked-up record prints and one set of plots from corrected record digital data files. Architect will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.
      b. Final Submittal: Submit PDF electronic files of marked-up record prints. Print each Drawing, whether or not changes and additional information were recorded.

B. Record Specifications: Submit annotated PDF electronic files of Project's Specifications, including addenda and contract modifications.

C. Record Product Data: Submit annotated PDF electronic files and directories of each submittal.
   1. Where record Product Data are required as part of operation and maintenance manuals, submit duplicate marked-up Product Data as a component of manual.

D. Miscellaneous Record Submittals: Refer to other Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Submit annotated PDF electronic files and directories of each submittal.

E. Reports: Submit written report indicating items incorporated in Project record documents concurrent with progress of the Work, including modifications, concealed conditions, field changes, product selections, and other notations incorporated.
PART 2 - PRODUCTS

2.01 RECORD DRAWINGS

A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings.

1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.
   a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
   b. Accurately record information in an acceptable drawing technique.
   c. Record data as soon as possible after obtaining it.
   d. Record and check the markup before enclosing concealed installations.

2. Content: Types of items requiring marking include, but are not limited to, the following:
   a. Dimensional changes to Drawings.
   b. Revisions to details shown on Drawings.
   c. Depths of foundations below first floor.
   d. Locations and depths of underground utilities.
   e. Revisions to routing of piping and conduits.
   f. Revisions to electrical circuitry.
   g. Actual equipment locations.
   h. Duct size and routing.
   i. Locations of concealed internal utilities.
   j. Changes made by Change Order or Construction Change Directive.
   k. Changes made following Architect's written orders.
   l. Details not on the original Contract Drawings.
   m. Field records for variable and concealed conditions.
   n. Record information on the Work that is shown only schematically.

3. Mark the Contract Drawings and Shop Drawings completely and accurately. Utilize personnel proficient at recording graphic information in production of marked-up record prints.

4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.

5. Mark important additional information that was either shown schematically or omitted from original Drawings.

6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

B. Record Digital Data Files: Immediately before inspection for Certificate of Substantial Completion, review marked-up record prints with Architect. When authorized, prepare a full set of corrected digital data files of the Contract Drawings, as follows:

1. Format: Annotated PDF electronic file with comment function enabled.

2. Incorporate changes and additional information previously marked on record prints. Delete, redraw, and add details and notations where applicable.
3. Refer instances of uncertainty to Architect for resolution.

   a. Refer to Division 01 Section "Submittal Procedures" for requirements related to use of Architect's digital data files.
   b. Architect will provide data file layer information. Record markups in separate layers.

C. Newly Prepared Record Drawings: Prepare new Drawings instead of preparing record Drawings where Architect determines that neither the original Contract Drawings nor Shop Drawings are suitable to show actual installation.
   1. New Drawings may be required when a Change Order is issued as a result of accepting an alternate, substitution, or other modification.
   2. Consult Architect for proper scale and scope of detailing and notations required to record the actual physical installation and its relation to other construction. Integrate newly prepared record Drawings into record Drawing sets; comply with procedures for formatting, organizing, copying, binding, and submitting.

D. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
   1. Record Prints: Organize record prints and newly prepared record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
   2. Format: Annotated PDF electronic file with comment function enabled.
   3. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file.
   4. Identification: As follows:
      a. Project name.
      b. Date.
      c. Designation "PROJECT RECORD DRAWINGS."
      d. Name of Architect.
      e. Name of Contractor.

2.02 RECORD SPECIFICATIONS

A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
   1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
   2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
   3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
   4. For each principal product, indicate whether record Product Data has been submitted in operation and maintenance manuals instead of submitted as record Product Data.
   5. Note related Change Orders, record Product Data, and record Drawings where applicable.
B. Format: Submit record Specifications as [annotated PDF electronic file] [paper copy] [scanned PDF electronic file(s) of marked up paper copy of Specifications].

2.03 RECORD PRODUCT DATA

A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Include significant changes in the product delivered to Project site and changes in manufacturer’s written instructions for installation.
3. Note related Change Orders, record Specifications, and record Drawings where applicable.

B. Format: Submit record Product Data as annotated PDF electronic file or scanned PDF electronic file(s) of marked up paper copy of Product Data.
1. Include record Product Data directory organized by specification section number and title, electronically linked to each item of record Product Data.

2.04 MISCELLANEOUS RECORD SUBMITTALS

A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

B. Format: Submit miscellaneous record submittals as PDF electronic file or scanned PDF electronic file(s) of marked up miscellaneous record submittals.
1. Include miscellaneous record submittals directory organized by specification section number and title, electronically linked to each item of miscellaneous record submittals.

PART 3 - EXECUTION

3.01 RECORDING AND MAINTENANCE

A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and modifications to project record documents as they occur; do not wait until the end of Project.

B. Maintenance of Record Documents and Samples: Store record documents and Samples in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for Architect’s reference during normal working hours.

END OF SECTION
SECTION 01 79 00

DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes administrative and procedural requirements for instructing Owner’s personnel, including the following:
   1. Demonstration of operation of systems, subsystems, and equipment.
   2. Training in operation and maintenance of systems, subsystems, and equipment.
   3. Demonstration and training video recordings.

B. Related Sections:
   1. Divisions 02 through 49 Sections for specific requirements for demonstration and training for products in those Sections.

1.02 INFORMATIONAL SUBMITTALS

A. Instruction Program: Submit outline of instructional program for demonstration and training, including a list of training modules and a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.
   1. Indicate proposed training modules utilizing manufacturer-produced demonstration and training video recordings for systems, equipment, and products in lieu of video recording of live instructional module.

B. Qualification Data: For facilitator and instructor.

C. Attendance Record: For each training module, submit list of participants and length of instruction time.

D. Evaluations: For each participant and for each training module, submit results and documentation of performance-based test.

1.03 CLOSEOUT SUBMITTALS

A. Demonstration and Training Video Recordings: Submit two copies within seven days of end of each training module.
   1. Identification: On each copy, provide an applied label with the following information:
      a. Name of Project.
      b. Name of Architect.
      c. Name of Contractor.
      d. Date of video recording.
2. Transcript: Prepared on 8-1/2-by-11-inch (215-by-280-mm) paper, punched and bound in heavy-duty, three-ring, vinyl-covered binders. Mark appropriate identification on front and spine of each binder. Include a cover sheet with same label information as the corresponding video recording. Include name of Project and date of video recording on each page.

3. At completion of training, submit complete training manual(s) for Owner's use.

1.04 QUALITY ASSURANCE

A. Facilitator Qualifications: A firm or individual experienced in training or educating maintenance personnel in a training program similar in content and extent to that indicated for this Project, and whose work has resulted in training or education with a record of successful learning performance.

B. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Division 01 Section "Quality Requirements," experienced in operation and maintenance procedures and training.

C. Preinstruction Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to demonstration and training including, but not limited to, the following:
   1. Inspect and discuss locations and other facilities required for instruction.
   2. Review and finalize instruction schedule and verify availability of educational materials, instructors' personnel, audiovisual equipment, and facilities needed to avoid delays.
   3. Review required content of instruction.
   4. For instruction that must occur outside, review weather and forecasted weather conditions and procedures to follow if conditions are unfavorable.

1.05 COORDINATION

A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations.

B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.

C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by Architect.

PART 2 - PRODUCTS

2.01 INSTRUCTION PROGRAM

A. Program Structure: Develop an instruction program that includes individual training modules for each system and for equipment not part of a system, as required by individual Specification Sections.
B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following as applicable to the system, equipment, or component:

1. Basis of System Design, Operational Requirements, and Criteria: Include the following:
   a. System, subsystem, and equipment descriptions.
   b. Performance and design criteria if Contractor is delegated design responsibility.
   c. Operating standards.
   d. Regulatory requirements.
   e. Equipment function.
   f. Operating characteristics.
   g. Limiting conditions.
   h. Performance curves.

2. Documentation: Review the following items in detail:
   a. Emergency manuals.
   b. Operations manuals.
   c. Maintenance manuals.
   d. Project record documents.
   e. Identification systems.
   f. Warranties and bonds.
   g. Maintenance service agreements and similar continuing commitments.

3. Emergencies: Include the following, as applicable:
   a. Instructions on meaning of warnings, trouble indications, and error messages.
   b. Instructions on stopping.
   c. Shutdown instructions for each type of emergency.
   d. Operating instructions for conditions outside of normal operating limits.
   e. Sequences for electric or electronic systems.
   f. Special operating instructions and procedures.

4. Operations: Include the following, as applicable:
   a. Startup procedures.
   b. Equipment or system break-in procedures.
   c. Routine and normal operating instructions.
   d. Regulation and control procedures.
   e. Control sequences.
   f. Safety procedures.
   g. Instructions on stopping.
   h. Normal shutdown instructions.
   i. Operating procedures for emergencies.
   j. Operating procedures for system, subsystem, or equipment failure.
   k. Seasonal and weekend operating instructions.
   l. Required sequences for electric or electronic systems.
   m. Special operating instructions and procedures.
5. Adjustments: Include the following:
   a. Alignments.
   b. Checking adjustments.
   c. Noise and vibration adjustments.
   d. Economy and efficiency adjustments.

6. Troubleshooting: Include the following:
   a. Diagnostic instructions.
   b. Test and inspection procedures.

7. Maintenance: Include the following:
   a. Inspection procedures.
   b. Types of cleaning agents to be used and methods of cleaning.
   c. List of cleaning agents and methods of cleaning detrimental to product.
   d. Procedures for routine cleaning
   e. Procedures for preventive maintenance.
   f. Procedures for routine maintenance.
   g. Instruction on use of special tools.

8. Repairs: Include the following:
   a. Diagnosis instructions.
   b. Repair instructions.
   c. Disassembly; component removal, repair, and replacement; and reassembly
      instructions.
   d. Instructions for identifying parts and components.
   e. Review of spare parts needed for operation and maintenance.

PART 3 - EXECUTION

3.01 PREPARATION

A. Assemble educational materials necessary for instruction, including documentation and
   training module. Assemble training modules into a training manual organized in coordination
   with requirements in Division 01 Section "Operations and Maintenance Data."

B. Set up instructional equipment at instruction location.

3.02 INSTRUCTION

A. Facilitator: Engage a qualified facilitator to prepare instruction program and training modules,
   to coordinate instructors, and to coordinate between Contractor and Owner for number of
   participants, instruction times, and location.
B. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
   1. Architect will furnish an instructor to describe basis of system design, operational requirements, criteria, and regulatory requirements.
   2. Owner will furnish an instructor to describe Owner's operational philosophy.
   3. Owner will furnish Contractor with names and positions of participants.

C. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.
   1. Schedule training with Owner, through Architect, with at least seven days' advance notice.

D. Evaluation: At conclusion of each training module, assess and document each participant's mastery of module by use of a demonstration performance-based test.

E. Cleanup: Collect used and leftover educational materials and give to Owner. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

3.03 DEMONSTRATION AND TRAINING VIDEO RECORDINGS

A. General: Engage a qualified commercial videographer to record demonstration and training video recordings. Record each training module separately. Include classroom instructions and demonstrations, board diagrams, and other visual aids, but not student practice.
   1. At beginning of each training module, record each chart containing learning objective and lesson outline.

B. Video Recording Format: Provide high-quality color video recordings with menu navigation in format acceptable to Architect.

C. Recording: Mount camera on tripod before starting recording, unless otherwise necessary to show area of demonstration and training. Display continuous running time.

D. Narration: Describe scenes on video recording by audio narration by microphone while recording or by dubbing audio narration off-site after video recording is recorded. Include description of items being viewed.

E. Transcript: Provide a transcript of the narration. Display images and running time captured from videotape opposite the corresponding narration segment.

F. Pre-Produced Video Recordings: Provide video recordings used as a component of training modules in same format as recordings of live training.

END OF SECTION
PART 1 - GENERAL

1.01 SUMMARY

A. This Section Includes:
   1. Requirements for Baseline Indoor Air Quality (IAQ) Testing for maximum indoor pollutant concentrations for acceptance of the facility.
   2. Requirements of this section are conditional, and will be mandatory only if the Building Flush-out outlined in Division 01 Section “Construction Indoor Air Quality Management” cannot be performed.

B. Related Sections:
   1. All work shall comply with Division 01 Section “Sustainable Design Requirements”.
   2. Coordinate with Commissioning activities specified in Division 01 Section “General Commissioning Requirements”.
   3. All work shall comply with Division 23, Section “Testing, Adjusting and Balancing for HVAC.”

1.02 SUBMITTALS

A. Baseline IAQ Testing: Submit a report for each test site specified for IAQ baseline testing as prescribed herein below and in Division 23, Section “Testing, Adjusting, and Balancing for HVAC.” Report on air concentrations of targeted pollutants identified in Subsection 3.01 of this section.

1.03 SEQUENCING AND SCHEDULING

A. Identify, program, and schedule all IAQ testing well in advance of construction in a manner to prevent delays to the performance of the work of this Contract in order to perform and complete all testing after the completion of construction activities, replacement of filtration media, and completion of TAB activities, and prior to occupancy.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 BASELINE IAQ TESTING

A. HVAC System Verification: To assure compliance with recognized standards for indoor air quality including ASHRAE Standard 62.1-2004, the Contractor’s independent testing and balancing agency shall verify the performance of each HVAC system prior to Indoor Air Quality testing, including space temperature and space humidity uniformity, outside air quantity, filter installation, drain pan operation, and any obvious contamination sources.
B. Indoor Air Quality Testing: Upon verification of HVAC system operation, the Contractor shall hire an independent contractor, subject to approval by the Owner’s Representative, with a minimum of 5 years experience in performing the types of testing specified herein, to test levels of indoor air contaminants for compliance with specified requirements.

1. Conduct baseline IAQ testing using testing protocols consistent with the United States Environmental Protection Agency Compendium of Methods for the Determination of Air Pollutants in Indoor Air.

2. A test plan shall be submitted for the approval of the Owner’s Representative. The plan shall specify procedures, times, instrumentation, and sampling methods that will be employed.

3. Perform IAQ testing for at least the minimum number of required sampling locations, determined as follows: For each portion of the building served by a separate ventilation system, the number of sampling points shall not be less than one per 25,000 sq. ft., or for each contiguous floor area, whichever is larger, and include areas with the least ventilation as calculated by Ventilation Rate Procedure of ASHRAE Standard 62.1-2004 and greatest presumed source strength as identified by Owner. Collect air samples on three consecutive days and average the results of each three-day test cycle to determine compliance or non-compliance of indoor air quality for each air handling zone tested.
   a. Verify areas to be tested with the Owner's Representative. Areas with 100% outside air ventilation rates such as laboratories are excluded from these testing requirements. The Contracting Officer's Representative is the sole judge of areas exempt from testing.

4. Perform IAQ testing following the completion of all interior construction activities and prior to occupancy. The building shall have all interior finishes installed including, but not limited to, millwork, doors, paint, carpet, and acoustic tiles. Perform testing prior to installation of furniture, workstation components, and casework.

5. Perform IAQ testing within the breathing zone, between 3’–0” and 6’–0” above the finished floor and over a minimum 4-hour period.

6. Collect air samples during normal occupied hours (prior to occupancy) with the building ventilation system starting at the daily normal start times and operated at the minimum outside air flow rate for the occupied mode throughout the duration of the air testing.

7. Sample and record outside air levels of formaldehyde and TVOC contaminants at three outside air locations (as determined by Owner) simultaneously with indoor tests to establish basis of comparison for these contaminant levels by averaging the three outdoor readings for each contaminant.

8. Perform airborne mold and mildew air sampling and speciation with simultaneous indoor and outdoor readings.
   a. Sample locations should include areas with least ventilation and highest presumed contaminant level.
   b. Samples are to be collected using a 12 liter-per-minute pump and a 0.45 micron polycarbonate filter, with a 4-hour duration for each sample.
   c. Speciation shall be done with DNA detection using the quantitative polymerase chain reaction (QPCR) method. To ensure that filters are not precontaminated with mold, a field blank filter cartridge shall be tested after every eighth sample is tested.
9. Acceptance of respective portions of the building by the Owner is subject to compliance with specified limits of indoor air quality contaminant levels.

C. Indoor air quality shall conform to the following standards and limits:
   1. Formaldehyde: <50 parts per billion.
   2. Particulates (PM10): 50 micrograms per cubic meter.
   3. Total Volatile Organic Compounds (TVOCs): 500 micrograms per cubic meter
   4. *4-Phenylcyclohexene (4-PCH): 6.5 micrograms per cubic meter.
   5. Carbon Monoxide: Not to exceed 9 parts per million and no greater than 2 parts per million above outdoor levels.
   6. Other compounds found on the California Office of Environmental Health Hazard Assessment’s list of chronic inhalation Reference Exposure Levels (RELs) are not to exceed those levels, as published on:
      http://www.oehha.ca.gov/air/chronic_rels/AllChrels.html
   7. Airborne Mold and Mildew: The species identified in indoor air cannot vary by more than 10% from those identified in the exterior samples.

D. Test Reports: Prepare test reports showing the results and location of each test, a summary of the HVAC operating conditions, and a listing of any discrepancies and recommendations for corrective actions, if required.
   1. Include certification of test equipment calibration with each test report.

E. For each sampling point where the maximum concentration limits are exceeded, the Contractor is responsible for conducting additional flush-out with outside air and retesting the specific parameter(s) exceeded to indicate the requirements are achieved. Repeat procedure until all requirements have been met. When retesting non-complying building areas, take samples from the same locations as in the first test. Retesting shall be performed at no additional expense to the Owner.

F. For each sampling point where the airborne mold and mildew indoor species distribution varies by more than 10% from exterior sampling speciation, Contractor shall identify the source of the mold and/or mildew and remediate with corrective action, then retest in accordance with section 3.01.B above until compliant results are attained.

G. In the event that any non-compliant test results occur, Contractor must provide a written report to the Owner describing the source(s) of the non-compliant condition(s) and the corrective action(s) implemented.

3.02 INDEPENDENT MATERIALS TESTING

A. Materials That Must Be Tested: All materials listed below that are proposed for use on this project shall be tested for permanent, in-place indoor air quality performance in accordance with requirements of these specifications. Results shall be furnished to the Contracting Officer’s Representative. Materials meeting the criteria for independent testing are as follows:
   1. Field-applied paint systems on appropriate substrate. Paint primers and intermediate coats (if used) should be applied with a typical drying time allowed between coats (not to exceed 7 days).
2. Carpet including manufacturer’s recommended adhesive. The carpet will be applied to the appropriate flooring per manufacturer’s instructions so that the testing is of the “carpet assembly.”
3. Ceiling tile.
4. Interior furnishings.
5. Any fireproofing material that may be exposed to indoor air, directly or in a plenum, applied to appropriate substrate

B. Materials for Testing: Only test representative samples of actual products selected for use on this project. Tests of products generically and/or technically similar but produced by a manufacturer other than that of the product selected for use on this project are invalid.


D. Performance Thresholds: All compounds detected that have chronic reference exposure levels listed in the California DHS Standard Practice document shall be analyzed and compared to the allowable concentration levels.

E. Materials Test Reports: Submit test reports to the Owner’s Representative. The report shall include raw emission levels, as well as the calculated resulting concentrations and the assumptions (loading, volume of space, ventilation rates) used to determine those resulting concentrations.

F. Product/Material Evaluation: All products/materials shown by testing to comply with emissions limits and other criteria specified in this section will be approved for use on this project subject to compliance with all other specified requirements of the Project Manual. Products/materials shown to exceed specified emission limits shall be discussed, test results interpreted, and a determination made as to alternative product uses or selections.

END OF SECTION
SECTION 01 81 13

SUSTAINABLE DESIGN REQUIREMENTS

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes general requirements and procedures for compliance with certain USGBC LEED prerequisites and credits needed for Project to obtain LEED Gold certification based on LEED-NC, Version 2.2.
   1. Other LEED prerequisites and credits needed to obtain LEED certification depend on material selections and may not be specifically identified as LEED requirements. Compliance with requirements needed to obtain LEED prerequisites and credits may be used as one criterion to evaluate substitution requests and comparable product requests.
   2. Additional LEED prerequisites and credits needed to obtain the indicated LEED certification depend on Architect’s design and other aspects of Project that are not part of the Work of the Contract.
   3. A copy of the LEED Project checklist is attached at the end of this Section for information only.

B. Related Sections:
   1. Divisions 01 through 33 Sections for LEED requirements specific to the work of each of these Sections. Requirements may or may not include reference to LEED.

1.02 DEFINITIONS

A. Chain-of-Custody Certificates: Certificates signed by manufacturers certifying that wood used to make products was obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship." Certificates shall include evidence that manufacturer is certified for chain of custody by an FSC-FSC-accredited certification body.

B. LEED: Leadership in Energy & Environmental Design.

C. Regional Materials: Materials that have been extracted, harvested, or recovered, as well as manufactured, within 500 miles of Project site. If only a fraction of a product or material is extracted/harvested/recovered and manufactured locally, then only that percentage (by weight) shall contribute to the regional value.

D. Regionally Manufactured Materials: Materials that are manufactured within a radius of 500 miles from Project site. Manufacturing refers to the final assembly of components into the building product that is installed at Project site.

E. Regionally Extracted and Manufactured Materials: Regionally manufactured materials made from raw materials that are extracted, harvested, or recovered within a radius of 500 miles from Project site.
F. **Recycled Content**: The recycled content value of a material assembly shall be determined by weight. The recycled fraction of the assembly is then multiplied by the cost of assembly to determine the recycled content value.

1. "Post-consumer" material is defined as waste material generated by households or by commercial, industrial, and institutional facilities in their role as end users of the product, which can no longer be used for its intended purpose.

2. "Pre-consumer" material is defined as material diverted from the waste stream during the manufacturing process. Excluded is reutilization of materials such as rework, regrind, or scrap generated in a process and capable of being reclaimed within the same process that generated it.

G. **Recycled Content**: The percentage by weight of constituents that have been recovered or otherwise diverted from the solid waste stream, either during the manufacturing process (pre-consumer), or after consumer use (post-consumer).

1. Spills and scraps from the original manufacturing process that are combined with other constituents after a minimal amount of reprocessing for use in further production of the same product are not recycled materials.

2. Discarded materials from one manufacturing process that are used as constituents in another manufacturing process are pre-consumer recycled materials.

### 1.03 INFORMATION SOURCES


B. Bay Area Air Quality Management District (BAAQMD); 939 Ellis Street, San Francisco, California 94109. Tel: (415) 771-6000. [www.baaqmd.gov](http://www.baaqmd.gov).

C. Center for Resource Solutions (CRS); Presidio Building, 49 P.O. Box 29512, San Francisco, CA 94129. Tel: (415) 561-2100. Fax: (415) 561-2105. [www.resource-solutions.org](http://www.resource-solutions.org) or [www.green-e.org](http://www.green-e.org).


E. South Coast Air Quality Management District (SCAQMD); 21865 E. Copley Drive, Diamond Bar, CA 91765. Tel: (909) 396-2000. [www.aqmd.gov](http://www.aqmd.gov).

F. U.S. Green Building Council (USGBC); 1015 18th Street, NW, Suite 805, Washington, DC 20036. Tel: (202) 82-USGBC or (202) 828-7422. Fax: (202) 828-5110. [www.usgbc.org](http://www.usgbc.org).
1.04 SUBMITTALS

A. General: Submit additional LEED submittals required by other Specification Sections.

B. LEED submittals are in addition to other submittals. If submitted item is identical to that submitted to comply with other requirements, submit duplicate copies as a separate submittal to verify compliance with indicated LEED requirements.

C. Project Materials Cost Data: Provide statement indicating total cost for materials used for Project. Costs shall exclude labor, overhead, and profit, or be calculated at 45% of the total construction cost (only hard costs of CSI MasterFormat 2004, Divisions 3-10, 31 and 32). Include breakout of costs for the following categories of items:
   1. Furniture.
   2. Plumbing.
   3. Mechanical.
   4. Electrical.
   5. Specialty items such as elevators and equipment.

D. LEED Action Plans: Provide preliminary submittals within 30 days of date established for the Notice to Proceed indicating how the following requirements will be met:
   1. Credit MR 2.1 and Credit MR 2.2: Waste management plan complying with Division 01 Section "Construction Waste Management and Disposal."
   2. Credit MR 7: List of proposed certified wood products. Indicate each product containing certified wood, including its source and cost of certified wood products.
   3. Credit EQ 3.1 and EQ 3.2: Construction indoor-air-quality management plan.

E. LEED Progress Reports: Concurrent with each Application for Payment, submit reports comparing actual construction and purchasing activities with LEED action plans for the following:
   1. Credit MR 2.1 and Credit MR 2.2: Waste reduction progress reports complying with Division 01 Section "Construction Waste Management and Disposal."
   2. Credit MR 7: Certified wood products.

F. LEED Documentation Submittals:
   1. Credit EA 5: Product data and wiring diagrams for sensors and data collection system used to provide continuous metering of building energy-consumption performance over a period of time of not less than one year of post-construction occupancy.
   2. Credit MR 2.1 and Credit MR 2.2: Comply with Division 01 Section "Construction Waste Management and Disposal."
   3. Credit MR 4.1: Product data and certification letter indicating percentages by weight of post-consumer and pre-consumer recycled content for products having recycled content. Include statement indicating costs for each product having recycled content.
4. Credits MR 5.1 and MR 5.2: Product data indicating location of material manufacturer for regionally manufactured materials. Include statement indicating cost for each regionally manufactured material and for each regionally extracted and manufactured material. Achieve 20% if practicable.
   a. Include statement indicating distance from manufacturer to Project for each regionally manufactured material.
   b. Include statement indicating location of and distance from Project to point of extraction, harvest, or recovery for each raw material used in regionally extracted and manufactured materials.

5. Credit MR 7: Product data and chain-of-custody certificates for products containing certified wood. Include statement indicating cost for each certified wood product.

6. Credit EQ 3.1:
   a. Construction indoor-air-quality management plan.
   b. Product data for temporary filtration media.
   c. Product data for filtration media used during occupancy.
   d. Construction Documentation: Six photographs at three different times during the construction period, along with a brief description of the SMACNA approach employed, documenting implementation of the indoor-air-quality management measures, such as protection of ducts and on-site stored or installed absorptive materials.

7. Credit EQ 3.2:
   a. Signed statement describing the building air flush-out procedures including the dates when flush-out was begun and completed and statement that filtration media was replaced prior to and after flush-out.
   b. Product data for filtration media used during flush-out and during occupancy.
   c. Report from testing and inspecting agency indicating results of indoor-air-quality testing and documentation showing compliance with indoor-air-quality testing procedures and requirements if testing is conducted.

8. Credit EQ 4.1: Product data for adhesives and sealants used inside the weatherproofing system indicating VOC content of each product used. Indicate VOC content in g/L calculated according to 40 CFR 59, Subpart D.

9. Credit EQ 4.2: Product data for paints and coatings used inside the weatherproofing system indicating chemical composition and VOC content of each product used. Indicate VOC content in g/L calculated according to 40 CFR 59, Subpart D.

10. Credit EQ 4.3: Product data for carpet systems used inside the weatherproofing system indicating compliance with Carpet and Rug Institute Green Label Indoor Air Quality Test Program.

11. Credit EQ 4.4: Product data for products containing composite wood or agrifiber products or wood glues indicating that they do not contain urea-formaldehyde resin.

G. Submittal Forms:
   1. Make LEED submittals on the appropriate LEED-NC Version 2.2 Submittal Template. Sample forms are included at the end of this section.
   2. Provide documentation of materials over $100 on the LEED-NC V2.2 Material/Product Submittal Form, copy attached at the end of this section.
1.05 QUALITY ASSURANCE

A. LEED requirements for this project are based on The LEED for New Construction v2.2 Reference Guide, as published by the United States Green Building Council (USGBC) and will be the basic reference for all of the Contractor’s work, whether specified herein or not. If there are conflicts between the specifications and the Guide, the Guide should be used.

B. LEED Coordinator: The Project has engaged an experienced LEED-Accredited Professional to coordinate LEED requirements. LEED coordinator may also serve as waste management coordinator.

PART 2 - PRODUCTS

2.01 RECYCLED CONTENT OF MATERIALS

A. Credit MR 4.1 and Credit MR 4.2: Provide building materials with recycled content such that post-consumer recycled content plus one-half of pre-consumer recycled content constitutes a minimum of 10 percent of cost of materials used for Project. Achieve 20% if practicable
   1. Cost of post-consumer recycled content of an item shall be determined by dividing weight of post-consumer recycled content in the item by total weight of the item and multiplying by cost of the item.
   2. Cost of pre-consumer recycled content of an item shall be determined by dividing weight of pre-consumer recycled content in the item by total weight of the item and multiplying by cost of the item.
   3. Do not include furniture, plumbing, mechanical and electrical components, and specialty items such as elevators and equipment in the calculation.
   4. Do not include profit, labor or overhead in the cost of the item.

2.02 CERTIFIED WOOD

A. Credit MR 7: Provide a minimum of 50 percent (by cost) of wood-based materials that are produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship."
   1. Wood-based materials include, but are not limited to, the following materials when made from wood, engineered wood products, or wood-based panel products:
      a. Rough carpentry.
      b. Miscellaneous carpentry.
      c. Finish carpentry.
      d. Architectural woodwork.
      e. Wood paneling.
      f. Wood veneer wall covering.
      g. Wood flooring.
      h. Wood cabinets.
      i. Furniture.
2.03 LOW-EMITTING MATERIALS

A. Credit EQ 4.1: For field applications that are inside the weatherproofing system, use adhesives and sealants that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D:

1. Wood Glues: 30 g/L.
2. Metal to Metal Adhesives: 30 g/L.
3. Adhesives for Porous Materials (Except Wood): 50 g/L.
4. Subfloor Adhesives: 50 g/L.
5. Plastic Foam Adhesives: 50 g/L.
6. Carpet Adhesives: 50 g/L.
7. Carpet Pad Adhesives: 50 g/L.
8. Ceramic Tile Adhesives: 65 g/L.
9. Structural Wood Member Adhesives: 140 g/L.
10. Non-membrane Roof Sealant: 300 g/L, Roadway Sealant 250 g/L.
11. VCT Adhesives: 50 g/L.
12. Cove Base Adhesives: 50 g/L.
13. Gypsum Board and Panel Adhesives: 50 g/L.
14. Rubber Floor Adhesives: 60 g/L.
15. Multipurpose Construction Adhesives: 70 g/L.
16. Contact Adhesive: 80 g/L.
17. Structural Glazing Adhesives: 100 g/L.
18. Special Purpose Contact Adhesive (contact adhesive that is used to bond melamine covered board, metal, unsupported vinyl, Teflon, ultra-high molecular weight polyethylene, rubber or wood veneer 1/16 inch or less in thickness to any surface): 250 g/L.
19. Top and Trim Adhesive: 250 g/L.
20. Plastic Cement Welding Compounds: 250 g/L.
21. ABS Welding Compounds: 325 g/L.
22. CPVC Welding Compounds: 490 g/L.
23. PVC Welding Compounds: 510 g/L.
24. Adhesive Primer for Plastic: 550 g/L.
25. Plastic Cement Welding Compounds: 250 g/L.
26. ABS Welding Compounds: 325 g/L.
27. CPVC Welding Compounds: 490 g/L.
28. PVC Welding Compounds: 510 g/L.
29. Adhesive Primer for Plastic: 550 g/L.
30. Sheet Applied Rubber Lining Adhesive: 850 g/L.
32. Aerosol Adhesive, General Purpose Web Spray: 55 percent by weight.
33. Special Purpose Aerosol Adhesive (All Types): 70 percent by weight.
34. Architectural Sealants: 250 g/L.
35. Single-Ply Roof Membrane Sealants: 450 g/L.
36. Other Sealants: 420 g/L.
37. Sealant Primers for Nonporous Substrates: 250 g/L.
38. Sealant Primers for Porous Substrates: 775 g/L.
39. Other Sealant Primers: 750 g/L.
B. Credit EQ 4.2: For field applications that are inside the weatherproofing system, use paints and coatings that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D and the following chemical restrictions:
1. Flat Paints, Coatings, and Primers: VOC not more than 50 g/L.
2. Nonflat Paints, Coatings, and Primers: VOC not more than 150 g/L.
3. Anticorrosive and Antirust Paints Applied to Ferrous Metals: VOC not more than 250 g/L.
4. Clear Wood Finishes, Varnishes: VOC not more than 350 g/L.
5. Clear Wood Finishes, Lacquers: VOC not more than 550 g/L.
6. Floor Coatings: VOC not more than 100 g/L.
7. Sealers: waterproofing sealers: VOC not more than 250 g/L.
8. Sanding sealers: VOC not more than 275 g/L.
9. All other sealers: VOC not more than 200 g/L.
10. Shellacs, Clear: VOC not more than 730 g/L.
11. Shellacs, Pigmented: VOC not more than 550 g/L.
12. Stains: VOC not more than 250 g/L.
13. Primers, Sealers, and Undercoaters: VOC not more than 200 g/L.
14. Dry-Fog Coatings: VOC not more than 400 g/L.
15. Zinc-Rich Industrial Maintenance Primers: VOC not more than 340 g/L.
16. Pretreatment Wash Primers: VOC not more than 420 g/L.
17. Aromatic Compounds: Paints and coatings shall not contain more than 1.0 percent by weight total aromatic compounds (hydrocarbon compounds containing one or more benzene rings).
18. Restricted Components: Paints and coatings shall not contain any of the following:
   a. Acrolein.
   b. Acrylonitrile.
   c. Antimony.
   d. Benzene.
   e. Butyl benzyl phthalate.
   f. Cadmium.
   g. Di (2-ethylhexyl) phthalate.
   h. Di-n-butyl phthalate.
   i. Di-n-octyl phthalate.
   j. 1,2-dichlorobenzene.
   k. Diethyl phthalate.
   l. Dimethyl phthalate.
   m. Ethylbenzene.
   n. Formaldehyde.
   o. Hexavalent chromium.
   p. Isophorone.
   q. Lead.
   r. Mercury.
   s. Methyl ethyl ketone.
   t. Methyl isobutyl ketone.
   u. Methylene chloride.
   v. Naphthalene.
   w. Toluene (methylbenzene).
   x. 1,1,1-trichloroethane.
   y. Vinyl chloride.
C. Credit EQ 4.3: Carpet systems must meet or exceed the requirements of the Carpet and Rug Institute Green Label Indoor Air Quality Test Program, including total volatile organic compounds (TVOCs), 4-PC (4-Phenylcyclohexene), formaldehyde, and styrene.

D. Credit EQ 4.4: Do not use composite wood or agrifiber products or adhesives that contain urea-formaldehyde resin.

PART 3 - EXECUTION

3.01 REFRIGERANT REMOVAL

A. Prerequisite EA 3: Remove CFC-based refrigerants from existing HVAC&R equipment indicated to remain and replace with refrigerants that are not CFC based. Replace or adjust existing equipment to accommodate new refrigerant as described in Division 23 Sections.

3.02 MEASUREMENT AND VERIFICATION

A. Credit EA 5: Implement measurement and verification plan consistent with Option D: Calibrated Simulation, Savings Estimation Method 2 in the EVO’s "International Performance Measurement and Verification Protocol (IPMVP) Volume III: Concepts and Options for Determining Energy Savings in New Construction" and as further defined by the measurement and verification plan developed by the design team. All necessary equipment is already included in design.

B. If not already in place, install metering equipment to measure energy usage. Monitor, record, and trend log measurements.

C. Evaluate energy performance and efficiency by comparing actual to predicted performance.

D. Measurement and verification period shall cover at least one year of postconstruction occupancy.

3.03 CONSTRUCTION WASTE MANAGEMENT

A. Credit MR 2.1 and Credit MR 2.2: Comply with Division 01 Section "Construction Waste Management and Disposal."

3.04 CONSTRUCTION INDOOR-AIR-QUALITY MANAGEMENT

A. Credit EQ 3.1: Comply with SMACNA’s "SMACNA IAQ Guideline for Occupied Buildings under Construction."
   1. If Owner authorizes use of permanent heating, cooling, and ventilating systems during construction period as specified in Division 01 Section "Temporary Facilities and Controls", install filter media having a MERV 8 according to ASHRAE 52.2 at each return-air inlet for the air-handling system used during construction.
   2. Remove return air inlet filters and replace all supply air filters immediately prior to flush-out.
B. Credit EQ 3.2:

1. After construction ends, prior to occupancy and with all interior finishes installed, perform a building flush-out by supplying a total volume of 14000 cu. ft. (4 300 000 L) of outdoor air per sq. ft. (sq. m) of floor area while maintaining an internal temperature of at least 60 deg F (16 deg C) and a relative humidity no higher than 60 percent. See Division 01 Section “Construction Indoor Air Quality Management” for flushout.

2. If occupancy is desired prior to flush-out completion, the space may be occupied following delivery of a minimum of 3500 cu. ft. (1 070 000 L) of outdoor air per sq. ft. (sq. m) of floor area to the space. Once a space is occupied, it shall be ventilated at a minimum rate of 0.30 cfm per sq. ft. (1.52 L/s per sq. m) of outside air or the design minimum outside air rate determined in EQ Prerequisite 1, whichever is greater. During each day of the flush-out period, ventilation shall begin a minimum of three hours prior to occupancy and continue during occupancy. These conditions shall be maintained until a total of 14000 cu. ft./sq. ft. (4 300 000 L/sq. m) of outside air has been delivered to the space. See Division 01 Section “Construction Indoor Air Quality Management” for flushout.

3. If building flush-out is not possible, perform Indoor Air Quality Testing as described in Division 01 Section “Construction Indoor Air Quality Management”, 3.05 and below:
   a. Conduct baseline indoor-air-quality testing, after construction ends and prior to occupancy, using testing protocols consistent with the EPA’s "Compendium of Methods for the Determination of Air Pollutants in Indoor Air," and as additionally detailed in the USGBC’s "LEED-NC: Reference Guide."
   b. Demonstrate that the contaminant maximum concentrations listed below are not exceeded:
      1) Formaldehyde: 50 ppb.
      2) Particulates (PM10): 50 micrograms/cu. m.
      3) Total Volatile Organic Compounds (TVOC): 500 micrograms/cu. m.
      4) 4-Phenylcyclohexene (4-PH): 6.5 micrograms/cu. m.
      5) Carbon Monoxide: 9 ppm and no greater than 2 ppm above outdoor levels.
   c. For each sampling point where the maximum concentration limits are exceeded, conduct additional flush-out with outside air and retest the specific parameter(s) exceeded to indicate the requirements are achieved. Repeat procedure until all requirements have been met. When retesting non-complying building areas, take samples from same locations as in the first test.
   d. Air-sample testing shall be conducted as follows:
      1) All measurements shall be conducted prior to occupancy but during normal occupied hours, and with building ventilation system starting at the normal daily start time and operated at the minimum outside air flow rate for the occupied mode throughout the duration of the air testing.
      2) Building shall have all interior finishes installed including, but not limited to, millwork, doors, paint, carpet, and acoustic tiles. Non-fixed furnishings such as workstations and partitions are encouraged, but not required, to be in place for the testing.
3) Number of sampling locations will vary depending on the size of building and number of ventilation systems. For each portion of building served by a separate ventilation system, the number of sampling points shall not be less than one per 25,000 sq. ft., or for each contiguous floor area, whichever is larger, and shall include areas with the least ventilation and greatest presumed source strength.

4) Air samples shall be collected between 3 and 6 feet from the floor to represent the breathing zone of occupants, and over a minimum four-hour period.

END OF SECTION
LEED-NC V2.2
MATERIAL/PRODUCT SUBMITTAL FORM

GENERAL INFO

Project Name: ____________________________ Project No. ____________________________
Product Name: ____________________________ (brand name, model number, etc)
Applicable Specification Section Number: ____________________________
Vendor/Supplier: ____________________________ www.
Contact: __________________ Tel: __________________
Manufacturer: __________________ www.
Contact: __________________ Tel: __________________

COST CERTIFICATION

Unit Cost: $ _______ per _______ No. of Units Installed: _______
OR (enter cost either above or below, not both)
Total Installed Material Cost of this Product: $ _______
(Note: Cost of material only, i.e. exclude labor, overhead, profit, and mechanical, electrical, plumbing and equipment)

CERTIFIED BY: (Contractor)
Print Name: __________________ Title: __________________
Signature: __________________ Date: __________________

PRODUCT CERTIFICATION (fill out all the areas that apply to this product)

1. MR Credits 3.1 and 3.2 – Material Reuse
   Contact: __________________ Tel: __________________
   Product Description: __________________
   Explain source: __________________
   City/County, State: __________________ Country: __________________
   Distance from Project: __________________
   Note: Products salvaged from this project for reinstallation on this project do not qualify as reused products for this purpose of this MR Credits 3.1 and 3.2.

2. MR Credits 4.1 and 4.2 – Recycled Content
   For Steel Products:
   Steel Content: ____________ Percent by weight (mass)
   1) ______ Steel Mill Source is: __________________
   2) ______ Mill letter describing mill process and typical re-used steel content is attached.
   For Non-Steel Products:
   Pre-Consumer/Post-Industrial % Recycled Content: ____________ Percent by weight (mass)
   Post-Consumer % Recycled Content: ____________ Percent by weight (mass)
   Attach Manufacturer’s Verification letter: Yes ______ No ______
   Definition: Recycled content is defined in accordance with FTC regulations, found in 16 CFR 260.7(e); see www.ftc.gov/bcp/grnrule/guides980427.htm

3. MR Credit 6 – Rapidly Renewable Materials
   Rapidly Renewable Content (RRC): ____________ Percent by weight (mass)
   RRC Description: __________________
   Definition: Made from plants that are harvested not more than 10 years after planting or wool.
4. MR Credits 5.1 and 5.2 – Regional Materials
Is this product manufactured within 500 miles of the project? Yes ☐ No ☐
If Yes, what is the number of miles to the project jobsite?
List the percentages of this product that were processed in the locations indicated. (Use “N/A” if not applicable.)

<table>
<thead>
<tr>
<th>Percent by weight</th>
<th>Manufacturing Process</th>
<th>City/County, State, Country</th>
<th>Distance from Project</th>
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5. MR Credit 7 – Certified Wood
FSC-Certified Solid Wood, Wood Chip, and Wood Fiber Content: __________________________ Percent by weight (mass)
  1) ☐ Product is FSC-trademarked.
  2) ☐ FSC Chain-of-Custody certificate number is: __________________________

Definition: FSC: Forest Stewardship Council Chain-of-Custody number or physical trademark; computation of less than 100 percent certified content in accordance with FSC policy.

6. IEQ Credits 4.1, 4.2, 4.3, and 4.4

<table>
<thead>
<tr>
<th>IEQ</th>
<th>Material Description</th>
<th>VOC Level (gal/liter)</th>
<th>Attach MSDS Sheet</th>
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<td>4.1</td>
<td>Adhesive/Sealant</td>
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<td>Yes ☐ No ☐</td>
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<td>4.2</td>
<td>Paint/Coating</td>
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<td>Yes ☐ No ☐</td>
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<td>4.3</td>
<td>Carpet/Carpet Pad</td>
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<td>Yes ☐ No ☐</td>
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<td>CRI Green Label Plus?</td>
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<td>CRI Certificate:</td>
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<td>4.4</td>
<td>Composite Wood or agrifiber product</td>
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<td>Yes ☐ No ☐</td>
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<td>Does the product contain added urea-formaldehyde?</td>
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Note:
1. IEQ Credit 4.1: VOC content of field-installed adhesives and sealants for indoor applications.
2. IEQ Credit 4.2: VOC content of interior paints and coatings.
3. IEQ Credit 4.3: The Carpet and Rug Institute (CRI) Green Label Plus certified carpets and rugs.
4. IEQ Credit 4.4: Added urea-formaldehyde content of composite wood and agrifiber products, defined as particleboard, plywood, medium density fiberboard, wheatboard, strawboard, panel substrates, door cores, and laminating adhesives; applies to manufacturers/suppliers and installer.
5. Volatile organic compounds (VOCs) are defined by U.S. EPA and State and local regulations applicable to this project. See Contract Documents for minimum criteria.

PRODUCT CERTIFIED BY: (Manufacturer/Source Firm/Contractor)
Print Name: __________________________ Title: __________________________
Signature: __________________________ Date: __________________________
I, [Responsible Individual], from [Company Name], verify that the information provided below is accurate, to the best of my knowledge.

**SELECT OPTION**

**Please select the appropriate option to determine the Total Materials Cost**

- **Default Materials Value:** Based on the total construction costs (hard costs for CSI Master Format 1995 Divisions 2-10 only)
- **Actual Materials Value:** Based on actual materials cost (excluding labor and equipment) (hard costs for CSI Master Format 1995 Divisions 2-10 only)

**DEFAULT MATERIALS VALUE**

Enter the total construction costs (hard costs for CSI Master Format 1995 Divisions 2-10 only) *

Default materials cost (total construction cost x 0.45)

**ACTUAL MATERIALS VALUE**

Enter the actual materials cost (excluding labor and equipment) (hard costs for CSI Master Format 1995 Divisions 2-10 only)*

**CREDIT COMPLIANCE**

Enter the reused/salvaged material descriptions and their cost in the table below.

*For cost values do not use commas and enter numbers only i.e. enter 100000 for $100,000

<table>
<thead>
<tr>
<th>Name / Description of Reused / Salvaged Material</th>
<th>Vendor</th>
<th>Material Cost* ($)</th>
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**Material Reuse Calculations**

- Total value ($) of reused/salvaged materials
- Value of reused / salvaged materials as a percentage of total materials cost *

*To qualify for the credit the percentage of reuse materials must be at least 5% of the total materials cost

**NARRATIVE (Optional)**

*Please provide any additional comments or notes regarding special circumstances or considerations regarding the project’s credit approach.*

The project is seeking point(s) for this credit using an alternate compliance approach. The compliance approach, including references to any applicable Credit Interpretation Rulings is fully documented in the narrative above. *(Indicate the number of points documented in the field below).*

Alternative Compliance Points Documented
<table>
<thead>
<tr>
<th>Project Name:</th>
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**READY TO SAVE THIS TEMPLATE TO LEED-ONLINE?** Please enter your first name, last name and today’s date below, followed by your LEED-Online Username and Password associated with the Project listed above to confirm submission of this template.

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Letter Template Version: 1
LEED-NC 2.2 Submittal Template

MR Credit 4.1/4.2: Recycled Content:
10%/20% (post-consumer + 1/2 pre-consumer)

(Responsible Individual)
(Company Name)

verify that the information provided below is accurate, to the best of my knowledge.

SELECT OPTION

Please select the appropriate option to determine the Total Materials Cost

- Default Materials Value: Based on the total construction costs (hard costs for CSI Master Format 1995 Divisions 2-10 only)
- Actual Materials Value: Based on actual materials cost (hard costs for CSI Master Format 1995 Divisions 2-10 only)

DEFAULT MATERIALS VALUE

Enter the total construction costs (hard costs for CSI Master Format 1995 Divisions 2-10 only)*

Default materials cost (total construction cost x 0.45)

ACTUAL MATERIALS VALUE

Enter the actual materials cost (excluding labor and equipment) (hard costs for CSI Master Format 1995 Divisions 2-10 only)*

CREDIT COMPLIANCE

Enter the material descriptions and their corresponding recycled content information in the table below. The combined post-consumer and pre-consumer recycled percentage should not be greater than 100%.

*For cost values do not use commas and enter numbers only i.e. enter 100000 for $100,000

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<tr>
<th>Material Name</th>
<th>Manufacturer</th>
<th>Material Cost* ($)</th>
<th>Post-Consumer Recycled Content (%)</th>
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### Recycled Content Calculations

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<th>Material Name</th>
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**Recycled Content Calculations**

- **Total value ($) of post-consumer content**
- **Total value ($) of pre-consumer content**
- **Total combined recycled content value ($): post-consumer + 1/2 pre-consumer**

**Combined Recycled Content Value as a percentage of Total Materials Cost**

**To qualify for the credit the percentage of recycled content (post-consumer + 1/2 pre-consumer must be at least 10% of the total materials cost**
NARRATIVE (Optional)

Please provide any additional comments or notes regarding special circumstances or considerations regarding the project's credit approach.

The project is seeking point(s) for this credit using an alternate compliance approach. The compliance approach, including references to any applicable Credit Interpretation Rulings is fully documented in the narrative above. (Indicate the number of points documented in the field below).

Alternative Compliance Points Documented

Project Name:

Credit:

Points Documented:

READY TO SAVE THIS TEMPLATE TO LEED-ONLINE? Please enter your first name, last name and today's date below, followed by your LEED-Online Username and Password associated with the Project listed above to confirm submission of this template.

First Name  Last Name  Date  Username (Email Address)  Password
(Responsible Individual)  
I, from (Company Name) 
verify that the information provided below is accurate, to the best of my knowledge.  

SELECT OPTION  

Please select the appropriate option to determine the Total Materials Cost  

- **Default Materials Value**: Based on the total construction costs  
  (hard costs for CSI Master Format 1995 Divisions 2-10 only)  

- **Actual Materials Value**: Based on actual materials cost (excluding labor and equipment)  
  (hard costs for CSI Master Format 1995 Divisions 2-10 only)  

DEFAULT MATERIALS VALUE  

Enter the total construction costs  
(hard costs for CSI Master Format 1995 Divisions 2-10 only) * 

Default materials cost (total construction cost x 0.45)  

ACTUAL MATERIALS VALUE  

Enter the actual materials cost (excluding labor and equipment)  
(hard costs for CSI Master Format 1995 Divisions 2-10 only)*  

CREDIT COMPLIANCE  

Enter the product names and their corresponding extraction and manufacture location information  
*For cost values do not use commas and enter numbers only i.e. enter 100000 for $100,000  

Table Legend:  
Percent Compliant = Percent of Product That Meets Both Extraction and Manufacture Criteria (% by Weight)  
Compliant Product Value = Total Product Cost x Percent of Qualifying Product  
Harvest Distance = Distance Between Project and Extraction/Harvest/Recovery Site (miles)  
Manufacture Distance = Distance Between Project and Final Manufacturing Location (miles)
<table>
<thead>
<tr>
<th>Product Name</th>
<th>Manufacturer</th>
<th>Total Product Cost* ($)</th>
<th>Percent Compliant (%)</th>
<th>Compliant Product Value</th>
<th>Harvest Distance (mi)</th>
<th>Manufacture Distance (mi)</th>
<th>Harvest / Manufacture Location Info Source</th>
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### Regional Materials Calculations

Total value ($) of locally manufactured and extracted materials:

Local material value as a percentage of total materials cost:

**To qualify for 1 point, the local materials value must be at least 10%. To qualify for 2 points, the local materials value must be at least 20%.

### NARRATIVE (Optional)

*Please provide any additional comments or notes regarding special circumstances or considerations regarding the project's credit approach.*
The project is seeking point(s) for this credit using an alternate compliance approach. The compliance approach, including references to any applicable Credit Interpretation Rulings is fully documented in the narrative above. (Indicate the number of points documented in the field below).

Alternative Compliance Points Documented

Project Name:

Credit: Points Documented:

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</table>

Letter Template Version: 1
MR Credit 6: Rapidly Renewable Materials

Please select the appropriate option to determine the Total Materials Cost

- **Default Materials Value**: Based on the total construction costs
  (hard costs for CSI Master Format 1995 Divisions 2-10 only)

- **Actual Materials Value**: Based on actual materials cost (excluding labor and equipment)
  (hard costs for CSI Master Format 1995 Divisions 2-10 only)

**DEFAULT MATERIALS VALUE**

Enter the total construction costs
(hard costs for CSI Master Format 1995 Divisions 2-10 only) *

Default materials cost (total construction cost x 0.45)

**ACTUAL MATERIALS VALUE**

Enter the actual materials cost (excluding labor and equipment)
(hard costs for CSI Master Format 1995 Divisions 2-10 only)*

**CREDIT COMPLIANCE**

Enter the product information name for each tracked material that meets the rapidly renewable criteria in the table below:

*For cost values do not use commas and enter numbers only i.e. enter 100000 for $100,000

<table>
<thead>
<tr>
<th>Material Name / Description</th>
<th>Manufacturer</th>
<th>Total Material Cost* ($)</th>
<th>Percent Of Product That Meets The Rapidly Renewable Criteria (% by Weight)</th>
<th>Compliant Product Value (Total Material Cost X Percent Of Qualifying Product)</th>
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### Rapidly Renewable Materials Calculation

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<th>Manufacturer</th>
<th>Total Material Cost* ($)</th>
<th>Percent Of Product That Meets The Rapidly Renewable Criteria (% by Weight)</th>
<th>Compliant Product Value (Total Material Cost X Percent Of Qualifying Product)</th>
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**Rapidly Renewable Materials Calculation**

- Total value ($) of rapidly renewable materials

- Rapidly renewable material value as a percentage of total materials cost*

  *To qualify for the credit the percentage of rapidly renewable materials must be at least 2.5% of the total materials cost

**NARRATIVE (Optional)**

Please provide any additional comments or notes regarding special circumstances or considerations regarding the project's credit approach.

The project is seeking point(s) for this credit using an alternate compliance approach. The compliance approach, including references to any applicable Credit Interpretation Rulings is fully documented in the narrative above. *(Indicate the number of points documented in the field below).*
**LEED-NC 2.2 Submittal Template**  
**MR Credit 6: Rapidly Renewable Materials**

---

Project Name:  
Credit:  
Points Documented:  

**READY TO SAVE THIS TEMPLATE TO LEED-ONLINE?** Please enter your first name, last name and today’s date below, followed by your LEED-Online Username and Password associated with the Project listed above to confirm submission of this template.

<table>
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<th>Last Name</th>
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<th>Username (Email Address)</th>
<th>Password</th>
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*Letter Template Version:*  

---
I, [Responsible Individual], from [Company Name], verify that the information provided below is accurate, to the best of my knowledge.

## CERTIFIED WOOD MATERIALS CALCULATION

Enter the values for all new wood-based components below to calculate the certified wood percentage for the project.

*For cost values do not use commas and enter numbers only i.e. enter 100000 for $100,000

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<th>Product Name</th>
<th>Vendor</th>
<th>Product Cost ($)</th>
<th>Wood Component Percentage (%)</th>
<th>FSC Certified Wood Percentage (%) of Wood Component</th>
<th>FSC Chain-of-Custody Certificate Number from Vendor or On-Product Label</th>
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Total Value of Wood Components:

Total Value of FSC Certified Wood Components:

FSC Certified Wood Value as a Percentage of Total new Wood-Based Cost:

Total FSC Certified Wood Value as a Percentage of Total new Wood-Based Cost must be at least 50% to achieve a point for this credit.

NARRATIVE (Optional)

Please provide any additional comments or notes regarding special circumstances or considerations regarding the project’s credit approach.

The project is seeking point(s) for this credit using an alternate compliance approach. The compliance approach, including references to any applicable Credit Interpretation Rulings is fully documented in the narrative above. (Indicate the number of points documented in the field below).

Alternative Compliance Points Documented

Project Name:

Credit: Points Documented:

READY TO SAVE THIS TEMPLATE TO LEED-ONLINE? Please enter your first name, last name and today’s date below, followed by your LEED-Online Username and Password associated with the Project listed above to confirm submission of this template.

First Name Last Name Date Username (Email Address) Password
(Responsible Individual)

verify that the information provided below is accurate, to the best of my knowledge.

CREDIT COMPLIANCE

Select units for diverted & landfill waste calculation
- Tons
- Cu. Yds.

Diverted Construction Waste Calculation

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<th>Diversion / Recycling Hauler or Location</th>
<th>Quantity of Diverted / Recycled Waste</th>
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**Total Construction waste generated**

**Total Construction waste diverted**

**Total percentage of construction waste diverted from landfill**

**To qualify for the credit the project must recycle and/or salvage at least 50% of non-hazardous construction, demolition and land-clearing debris.**
NARRATIVE (Required)

Please describe the project's construction waste management approach and plan. Please provide any additional comments or notes regarding special circumstances or considerations regarding the project's credit approach.

NARRATIVE (Optional)

Please provide any additional comments or notes regarding special circumstances or considerations regarding the project's credit approach.

The project is seeking point(s) for this credit using an alternate compliance approach. The compliance approach, including references to any applicable Credit Interpretation Rulings is fully documented in the narrative above. (Indicate the number of points documented in the field below).

Alternative Compliance Points Documented

Project Name: ____________________________

Credit: ____________________________

Points Documented: ______________

READY TO SAVE THIS TEMPLATE TO LEED-ONLINE? Please enter your first name, last name and today's date below, followed by your LEED-Online Username and Password associated with the Project listed above to confirm submission of this template.

First Name: ____________________________

Last Name: ____________________________

Date: ____________________________

Username (Email Address): ____________________________

Password: ____________________________
I, [Responsible Individual], from [Company Name], verify that the information provided below is accurate, to the best of my knowledge.

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<th>Product Manufacturer</th>
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</table>
## EQ Credit 4.2: Low-Emitting Materials: Paints & Coatings

### List of all Indoor Paint and Coating Products

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<tr>
<th>Product Manufacturer</th>
<th>Product Name / Model</th>
<th>Product VOC Content (g/L)</th>
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### List of all Indoor Anti-Corrosive and/or Anti-Rust Paint Products

There were NO Indoor Anti-Corrosive and/or Anti-Rust Paint Products used for this project.

### List of all Indoor Anti-Corrosive and/or Anti-Rust Paint Products

<table>
<thead>
<tr>
<th>Product Manufacturer</th>
<th>Product Name / Model</th>
<th>Product VOC Content (g/L)</th>
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</table>
## EQ Credit 4.2: Low-Emitting Materials: Paints & Coatings

### List of all Indoor Anti-Corrosive and/or Anti-Rust Paint Products

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<tr>
<th>Product Manufacturer</th>
<th>Product Name / Model</th>
<th>Product VOC Content (g/L)</th>
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List of all Indoor Anti-Corrosive and/or Anti-Rust Paint Products

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<th>Product Name / Model</th>
<th>Product VOC Content (g/L)</th>
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NARRATIVE (Optional)

Please provide a narrative to describe any special circumstances or non-standard compliance paths taken by the project.

The project is seeking point(s) for this credit using an alternate compliance approach. The compliance approach, including references to any applicable Credit Interpretation Rulings is fully documented in the narrative above. (Indicate the number of points documented in the field below).

Alternative Compliance Points Documented

Project Name:

Credit: Points Documented:

READY TO SAVE THIS TEMPLATE TO LEED-ONLINE? Please enter your first name, last name and today’s date below, followed by your LEED-Online Username and Password associated with the Project listed above to confirm submission of this template.

First Name    Last Name    Date    Username (Email Address)    Password
I, [Responsible Individual], from [Company Name], verify that the information provided below is accurate, to the best of my knowledge.

CREDIT COMPLIANCE

Please provide the required data for all Indoor Carpet Product(s) used on this project.

List for each installed Indoor Carpet System

<table>
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<th>Product Manufacturer</th>
<th>Product Name / Model</th>
<th>Product meets the requirements of CRI Green Label Plus Program</th>
<th>Source of Compliance Statement</th>
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Note: The table continues with more rows for additional Indoor Carpet Products.
### EQ Credit 4.3: Low-Emitting Materials: Carpet Systems

**List for each installed Indoor Carpet System**

<table>
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<th>Product Manufacturer</th>
<th>Product Name / Model</th>
<th>Product meets the requirements of CRI Green Label Plus Program</th>
<th>Source of Compliance Statement</th>
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**List for each installed Indoor Carpet Cushion**

- There were NO Indoor Carpet Cushions used for this project.

**List for each installed Indoor Carpet Cushion**

<table>
<thead>
<tr>
<th>Product Manufacturer</th>
<th>Product Name / Model</th>
<th>Product meets the requirements of CRI Green Label Plus Program</th>
<th>Source of Compliance Statement</th>
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This form is part of the LEED-NC 2.2 Submittal Template. It is used to list and verify the installation of indoor carpet systems and cushions that meet the requirements of the CRI Green Label Plus Program. Each entry includes the product manufacturer, product name or model, and a checkmark indicating whether the product meets the requirements. The template is designed to ensure compliance with environmental standards.
EQ Credit 4.3: Low-Emitting Materials: Carpet Systems

NARRATIVE (Optional)

*Please provide a narrative to describe any special circumstances or non-standard compliance paths taken by the project.*

The project is seeking point(s) for this credit using an alternate compliance approach. The compliance approach, including references to any applicable Credit Interpretation Rulings is fully documented in the narrative above. *(Indicate the number of points documented in the field below).*

Alternative Compliance Points Documented

Project Name:

Credit: Points Documented:

READY TO SAVE THIS TEMPLATE TO LEED-ONLINE? Please enter your first name, last name and today’s date below, followed by your LEED-Online Username and Password associated with the Project listed above to confirm submission of this template.

First Name Last Name Date Username (Email Address) Password
I, [Responsible Individual], from [Company Name], verify that the information provided below is accurate, to the best of my knowledge.

**CREDIT COMPLIANCE**

Please provide the required data for all Indoor Composite Wood and Agrifiber Product(s) used on this project.

List for each installed Indoor Composite Wood and Agrifiber products.

<table>
<thead>
<tr>
<th>Product Manufacturer</th>
<th>Product Name / Model</th>
<th>Product Contains No Added Urea-Formaldehyde Content</th>
<th>Source of Compliance Statement</th>
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</table>
NARRATIVE (Optional)

Please provide a narrative to describe any special circumstances or non-standard compliance paths taken by the project.

The project is seeking point(s) for this credit using an alternate compliance approach. The compliance approach, including references to any applicable Credit Interpretation Rulings is fully documented in the narrative above. (Indicate the number of points documented in the field below).

Alternative Compliance Points Documented

Project Name:
Credit: Points Documented:

READY TO SAVE THIS TEMPLATE TO LEED-ONLINE? Please enter your first name, last name and today's date below, followed by your LEED-Online Username and Password associated with the Project listed above to confirm submission of this template.

First Name Last Name Date Username (Email Address) Password
CREDIT COMPLIANCE

Please provide the required data for each indoor Adhesive, Sealant, Sealant Primer and Aerosol Adhesive Product(s) used on this project.

List of all Indoor Adhesives, Sealant and Sealant Primer Products

<table>
<thead>
<tr>
<th>Product Manufacturer</th>
<th>Product Name / Model</th>
<th>Product VOC Content (g/L)</th>
<th>SCAQMD Allowable VOC Content (g/L)</th>
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### List of all Indoor Aerosol Adhesives

- There were NO Indoor Aerosol Adhesives used for this project.
## List of all Indoor Aerosol Adhesives

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### NARRATIVE (Optional)

*Please provide a narrative to describe any special circumstances or non-standard compliance paths taken by the project.*

The project is seeking point(s) for this credit using an alternate compliance approach. The compliance approach, including references to any applicable Credit Interpretation Rulings is fully documented in the narrative above. *(Indicate the number of points documented in the field below).*
**EQ Credit 4.1: Low-Emitting Materials: Adhesives & Sealants**

**Project Name:**

**Credit:**

**Points Documented:**

**READY TO SAVE THIS TEMPLATE TO LEED-ONLINE?** Please enter your first name, last name and today's date below, followed by your LEED-Online Username and Password associated with the Project listed above to confirm submission of this template.

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**Letter Template Version:**

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### LEED™ NC 2.2 for Campuses Checklist

**Phase:** Construction Documents  
**Project Name:** CSU-Pueblo Academic Resource Center  
**LEED Level Pursuing:** Gold

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<td>Prereq 1 Construction Activity Pollution Prevention</td>
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<td>Y Prereq 1 Storage &amp; Collection of Recyclables</td>
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<td>Credit 1 Site Selection</td>
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<td>Credit 1.1 Building Reuse, Maintain 75% of Exist.Walls, Floors &amp; Roof</td>
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<td>Credit 2 Development Density &amp; Community Connectivity</td>
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<td>Credit 1.2 Building Reuse, Maintain 95% of Exist. Wall, Floors &amp; Roof</td>
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<td>Credit 3 Brownfield Redevelopment</td>
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<td>Credit 1.3 Building Reuse, Maintain 50% of Interior Non-structural</td>
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<td>Credit 4.1 Alternative Transportation, Public Transportation Access</td>
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<td>Credit 2.1 Construction Waste Management, Divert 50% from Disposal</td>
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<td>Credit 4.2 Alternative Transportation, Bike Storage &amp; Changing Rooms</td>
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<td>Credit 4.3 Alternative Transportation, Low-Emitting &amp; Fuel-Eff. Vehicles</td>
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<td>Credit 3.1 Materials Reuse, Specify 5%</td>
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<td>Credit 5.1 Site Development, Protect or Restore Habitat</td>
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<td>Credit 4.1 Recycled Content, Specify 10% (post+ ½ pre-consumer)</td>
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<td>Credit 5.2 Site Development, Maximize Open Space</td>
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<td>Credit 4.2 Recycled Content, Specify 20% (post + ½ pre-consumer)</td>
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<td>Credit 6.1 Stormwater Design, Quantity Control</td>
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<td>Credit 5.1 Regional Materials, 10% Ext., Processed &amp; Mfg. Regionally</td>
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<td>Credit 6.2 Stormwater Design, Quality Control</td>
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<td>Credit 5.2 Regional Materials, 20% Ext., Processed &amp; Mfg. Regionally</td>
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<td>Credit 7.1 Heat Island Effect, Non-Roof</td>
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<td>Credit 6 Rapidly Renewable Materials</td>
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<td>Prereq 1 Fundamental Commissioning of Building Energy Systems</td>
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<td>Y Prereq 1 Minimum IAQ Performance, ASHRAE 62.1-2004</td>
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<td>Credit 1.1 Water Efficient Landscaping, Reduce by 50%</td>
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<td>Credit 1.1.1 Environmental Tobacco Smoke (ETS) Control</td>
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<td>Credit 1.2.1 Outdoor Air Delivery Monitoring</td>
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<td>Credit 2.1 Increased Ventilation</td>
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<td>Credit 3.1.1 Construction IAQ Management Plan, During Construction</td>
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<td>Credit 3.1.2 Construction IAQ Management Plan, Before Occupancy</td>
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<td>Credit 3.3 Water Use Reduction, 40% Reduction</td>
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<td>Credit 4.2 Low-Emitting Materials, Paints &amp; Coatings</td>
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<td>Credit 4.2.1 Indoor Chemical &amp; Pollutant Source Control</td>
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<td>Credit 4.3 Low-Emitting Materials, Carpet Systems</td>
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<td>Credit 6.1 Controllability of Systems, Lighting</td>
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<td>Credit 4.4 Low-Emitting Materials, Composite Wood &amp; Agrifiber</td>
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<td>Credit 6.2 Controllability of Systems, Thermal Comfort</td>
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<td>Credit 4.5 Low-Emitting Materials, Interior Surfaces</td>
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<td>Credit 7.1 Thermal Comfort, Comply with ASHRAE SS-2004</td>
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<td>Credit 7.2 Thermal Comfort, Verification</td>
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<td>Credit 8.1 Daylight &amp; Views, Daylight 75% of Spaces</td>
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<td>Credit 5.2 Low-Emitting Materials, Air Systems</td>
<td>1</td>
<td>1</td>
<td>Credit 8.2 Daylight &amp; Views, Views for 90% of Spaces</td>
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Certified 26-32 points  Silver 33-38 points  Gold 39-51 points  Platinum 52-69 points

43 14 12 Project Totals (pre-certification estimates) 69 Points
SECTION 01 81 19

CONSTRUCTION INDOOR AIR QUALITY MANAGEMENT

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
1. Description of a construction Indoor Air Quality (IAQ) Management Plan.
2. IAQ construction requirements.

B. Related Sections:
1. Divisions 01 through 33 sections for LEED requirements specific to the Work of each of those sections. These requirements may or may not include reference to LEED.
2. Division 01 Section “Testing for IAQ”.
3. Division 1 Section “Sustainable Design Requirements” for low-emitting material requirements.
4. Division 23 Section “Testing, Adjusting, and Balancing for HVAC” for additional requirements for baseline testing for IAQ.
5. Division 23 Section “Testing, Adjusting, and Balancing for HVAC” for cleaning of HVAC system including ductwork, air intakes and returns, and changing of filters.

C. References:
1. American Conference of Government Industrial Hygienists (ACGIH).
   a. 52.2 – Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size.
   b. 55 – Thermal Environmental Conditions for Human Occupancy.
   c. 62.1 – Ventilation for Acceptable Indoor Air Quality.
   d. 62.2 – Ventilation and Acceptable Indoor Air Quality for Low-Rise Residential Buildings.
3. GREENGUARD Environmental Institute (GREENGUARD) - Indoor Air Quality Certification Program.
5. Sheet Metal and Air Conditioning Manufacturer’s Association International (SMACNA) (www.smacna.org)
6. United States Environmental Protection Agency (EPA):
1.02 DEFINITIONS

A. **Dry Products**: Products used in a solid state, including gypsum board, carpet, acoustical panels and tiles, and textiles.

B. **MERV**: Minimum Efficiency Reporting Value.

C. **Priority Products**: Products known to be high chemical emitters, long term emitters, and those expected to present emissions in high amounts (high surface area).

D. **Threshold Limit Value (TLV)**: Industrial Workplace Standard as defined by ACGIH.

E. **Wet Products**: Products used in a liquid or semi-liquid state, including adhesives, joint sealers, paints, and coatings.

1.03 INDOOR AIR QUALITY

A. **Goals**: The Owner has set the following indoor air quality goals for jobsite operations on the project, within the limits of the construction schedule, Contract Sum, and available materials, equipment, products and services. Goals include:
   1. Protect workers on the site from undue health risks during construction.
   2. Prevent residual problems with indoor air quality in the completed building.

1.04 SUBMITTALS

A. **Indoor Air Quality Plan**: Within 14 days after receipt of Notice to Proceed and prior to any waste removal from the project, develop and submit for review a healthy indoor air quality plan.

B. **LEED Letter Template for Credit EQ 3.1 and 3.2**: Include supporting documentation, including photos of protections described in 1.05 of this section, identifying measures taken to protect indoor air quality.

C. **Final Construction Products List**:
   1. Submit list of proposed indoor construction and finishing products.
   2. Include strategies for minimizing use of wet products.
   3. Obtain approval by Commissioning Agent prior to installation of products.

D. **Indoor Air Quality Test Report (if necessary)**:
   1. Provide copies of Indoor Air Quality Test Report from Indoor Environmental Consultant.
   2. Include in report:
      a. Study design including methodology for determination of air sampling locations and duration of sampling.
      b. Summary of sampling and analytical methods employed.
      c. Copy of field sampling logs.
d. Summary of methods and results used to determine that ventilation system was started at normal daily start time and operated at minimum outside airflow rates for occupied mode for duration of air testing.

e. Laboratory analytical data for each contaminant and summary table showing compliance with specified criteria.

1.05 QUALITY ASSURANCE

A. Contractor shall develop an Indoor Air Quality plan to encompass the entire schedule of the construction.

B. The Indoor Air Quality Plan shall include:

1. Planned measures to be taken to provide good indoor air quality (IAQ) during construction and after construction is complete and the occupants have moved into the building. This plan shall be based on the SMACNA standard “IAQ Guidelines for Occupied Buildings under Construction” and the requirements of the LEED 2.2 New Construction Rating System.

a. It is not the intent of this document to replace or supersede OSHA regulations as to safe construction workplace practices. It remains the responsibility of the Contractor and the individual sub-contractors to maintain safe building and site operations. Additional precautions may be necessary when hazardous materials are present.

2. The plan shall address construction IAQ by recommending procedures in five areas of concern, which will in turn allow the building to achieve the sought LEED program points:

a. HVAC System protection.

b. Contaminant Source Control.

c. Pathway Interruption.

d. Housekeeping.

e. Scheduling.

C. The following describes the specific measures to be performed in each area of concern:

1. HVAC Protection:

a. Do not utilize HVAC system during construction if practicable. Seal all supply and return air grilles.

b. If HVAC systems must be used, seal all return air grilles and supply 100% Outside Air as practicable.

c. If HVAC system must be used and return openings cannot be sealed, provide MERV 8 filters at the return and MERV 13 filters for supply air intake when in use. Perform frequent maintenance when the HVAC system is being utilized and replace filters as they become loaded, prior to building flushout, and prior to occupancy.

d. When performing construction activities that produce dust, such as drywall sanding, concrete cutting, masonry work, wood sawing, or adding insulation, seal off the supply diffusers and return air system openings completely for the duration of the task.
e. Shut down and seal off the supply diffusers and return air ducts during any demolition operations.
f. Whenever the HVAC system is not used during construction, seal off the supply diffusers and return air system openings to prevent the accumulation of dust and debris in the duct system.
g. Do not use the mechanical rooms to store construction or waste materials. Keep rooms clean and neat.
h. Provide periodic duct inspections during construction; if the ducts become contaminated due to inadequate protection, clean the ducts professionally in accordance with NADCA (National Duct Cleaning Association) standards.
i. The General Contractor shall take photographs showing measures taken.

2. Source Control:
   a. Use low VOC products as indicated in the specification to reduce potential problems.
   b. Restrict traffic volume and prohibit idling of motor vehicles where emissions could be drawn into the building.
   c. Utilize electric or natural gas alternatives for gasoline and diesel equipment where possible and practical. Use low-sulfur diesel in lieu of regular diesel.
   d. Cycle equipment off when not being used or needed.
   e. Exhaust pollution sources to the outside with portable fan systems. Prevent exhaust from recirculating back into the building.
   f. Keep containers of wet products closed as much as possible. Cover or seal containers of waste materials that can release odor or dust.
   g. Protect stored on-site material or installed absorptive building materials from weather and moisture. Wrap with plastic and seal tight to prevent moisture absorption.
   h. The General Contractor shall take photographs showing measures taken.

3. Pathway Interruption:
   a. Provide dust curtains or temporary enclosures to prevent dust from migrating to other areas when applicable.
   b. Locate pollutant sources as far away as possible from supply ducts and areas occupied by workers when feasible. Supply and exhaust systems may have to be shut down or isolated during such activity.
   c. During construction, isolate areas of work to prevent contamination of clean or occupied areas. Pressure differentials may be utilized to prevent contaminated air from entering clean areas.
   d. Depending on weather, ventilation using 100% outside air will be used to exhaust contaminated air directly to the outside during installation of VOC emitting materials.
   e. The General Contractor shall take photographs showing measures taken.
4. **Housekeeping:**
   a. Provide regular cleaning concentrating on HVAC equipment and building spaces to remove contaminants from the building prior to occupancy.
   b. All coils, air filters, fans, and ductwork shall remain clean during installation and, if required, will be cleaned prior to performing the testing, adjusting and balancing of the systems.
   c. Suppress and minimize dust with wetting agents or sweeping compounds. Utilize efficient and effective dust collecting methods such as a damp cloth, wet, mop, or vacuum with particulate or HEPA filters, or wet scrubber.
   d. Remove accumulations of water inside the building. Protect porous materials such as insulation and ceiling tile from exposure to moisture.
   e. Thoroughly clean all interior surfaces prior to replacing filters and running HVAC system for system balancing, commissioning, and building flushout.
   f. Provide photographs of the above activities during construction to document compliance.

5. **Scheduling and Construction Activity Sequence:**
   a. Schedule high pollution activities that utilize high VOC level products (including paints, sealers, insulation, adhesives, caulking, and cleaners) to take place prior to installing highly absorbent materials (such as ceiling tiles, gypsum wall board, fabric furnishings, carpet, and insulation, for example). These materials will act as ‘sinks’ for VOCs, odors, and other contaminants, and release them later after occupancy.

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**PART 2 - PRODUCTS**

2.01 **GENERAL**

A. Interior Construction and Finishing Products; in purchasing products, give preference to:
   1. Products designed and manufactured in manner to produce least harmful and irritating effects.
   2. Products having characteristics outlined in Division 01 Section “Sustainable Design Requirements.”
   3. Products certified by GREENGUARD as Low Emitting Product. For products not GREENGUARD Certified, test minimum one year prior to installation to ensure conformance to GREENGUARD standard emission values.
   4. Products providing lowest practical yet technologically achievable emissions of particulates and chemical vapors, as defined in following paragraphs.

B. Maximum Chemical emission Values for Products In Commercial or Retail Buildings:
   1. Total VOC emission rate: Maximum total volatile organic compounds (VOC) of 0.5 milligrams/cubic meter (mg/m³).
   2. Formaldehyde: Maximum 0.05 parts per million (ppm).
PART 3 - EXECUTION

3.01 CONSTRUCTION SITE MANAGEMENT

A. If weather or plumbing leaks result in interior of building becoming wet:
   1. Ensure that building is properly dried out prior to installation of any additional materials into the space.
   2. Inspect installed materials for mold and mildew.
   3. Affected materials less than 10 square feet in area: Remediate materials according to accepted industry practices.
   4. Affected materials 10 square feet or more in area: Employ certified remediation firm to remove materials from site.

B. For projects incorporating new construction in an existing space, follow the procedures outlined in the Sheet Metal and Air Conditioning National Contractors Association (SMACNA) IAQ Guidelines for Occupied Buildings Under Construction, Chapter 3, also see section 3.03 below.

3.02 SCHEDULING AND PRODUCT INSTALLATION SEQUENCING

A. Schedule shipment and delivery of products based on actual construction progress to minimize time products are stored on site.

B. Prepare and staff building site for delivery of products.

C. Inspect products upon delivery for conformance to Final Construction Materials List and to ensure that they are free from water and moisture damage and properly stored.

D. Use the least practical amount of wet materials.

E. Do not install dry materials until wet materials have been installed and allowed to dry to greatest extent practical.

F. Choose drying times so that specified pollutant emission rates are achieved prior to installation of dry materials.
G. Install solvent containing materials during periods during which building is unoccupied. Schedule installation as early as possible during construction to allow for maximum off-gassing prior to building occupancy or re-occupancy.

H. Install high-VOC emitting products prior to installation of porous and fibrous products, or protect with polyethylene sheeting, properly sealed.

I. Complete installation of interior finishing materials two to four weeks prior to building occupancy. Continuously flush out building with fresh air for two to four weeks.

J. Provide temporary ventilation during touch-up operations; extend building flush-out for minimum of four days after touch-up is complete.

3.03 OPERATION OF HVAC SYSTEMS DURING CONSTRUCTION IN OCCUPIED BUILDINGS

A. Do not operate HVAC systems during construction if possible or as described in Division 01 Section Temporary Facilities and Controls.

B. Depressurize construction area at rate at least 10 percent greater than rate of supply or pressurize existing spaces, whichever is more feasible.

C. Erect supplemental containment barriers if pressurization is not adequate to control construction dust and odors in occupied areas.

D. Ensure that construction equipment and staging areas are away from air intakes for existing construction.

E. Temporarily seal intake dampers for existing space when high-emitting construction activities are performed near outdoor air intakes for existing construction.

F. During demolition or construction in existing spaces:
   1. Do not operate building HVAC systems in affected areas.
   2. Temporarily seal supply and return openings with plastic sheeting.
   3. If system must be operational during demolition or construction, install temporary MERV 8 filters in return openings in accordance with LEED Guidelines; maintain in clean condition.

3.04 BUILDING FLUSH-OUT

A. Following completion of interior finishes and installation of new furnishings, flush building with 100 percent clean outdoor air for two to four weeks prior to occupancy. If time does not permit a two to four week flush-out period, the design and construction team shall designate whatever time is available for building flush (even if it is as minimal as 24 hours).

B. Retain one or more of three subparagraphs below. Retain option in paragraph above if retaining more than one subparagraph below. Project's mechanical engineer of record should verify that HVAC system design and equipment indicated are capable of delivering flush-out indicated. Provide HVAC system and equipment operating
information necessary to achieve credit. If Project HVAC systems and equipment cannot
suit requirement, consider requiring temporary systems and equipment.

C. After construction ends, prior to occupancy and with all interior finishes installed,
perform a building flush-out by supplying a total volume of 14000 cu. ft. (4 300 000 L) of
outdoor air per sq. ft. (sq. m) of floor area while maintaining an internal temperature of
at least 60 deg F (16 deg C) and a relative humidity no higher than 60 percent.

D. If occupancy is desired prior to flush-out completion, the space may be occupied
following delivery of a minimum of 3500 cu. ft. (1 070 000 L) of outdoor air per sq. ft.
(sq. m) of floor area to the space. Once a space is occupied, it shall be ventilated at a
minimum rate of 0.30 cfm per sq. ft. (1.52 L/s per sq. m) of outside air or the design
minimum outside air rate determined in EQ Prerequisite 1, whichever is greater. During
each day of the flush-out period, ventilation shall begin a minimum of three hours prior
to occupancy and continue during occupancy. These conditions shall be maintained
until a total of 14000 cu. ft./sq. ft. (4 300 000 L/sq. m) of outside air has been delivered
to the space.

E. After flush-out, inspect MERV 13 filtration media, except for those filters processing only
outdoor air. Replace filters if necessary.

3.05 INDOOR AIR QUALITY TESTING

A. Indoor Air Quality Testing is not necessary if building flush-out is performed.

B. Perform testing after completion of construction, installation of millwork, doors, paint,
carpet, acoustic tiles, but prior to the installation of non-fixed furnishings and Owner
occupancy, using protocols established by reputable standard setting or method
development organizations such as state and federal agencies and reputable non-
governmental organizations such as the GREENGUARD Environmental Institute or ASTM.

C. Conduct testing prior to Owner occupancy but during normally occupied hours.

D. Operate building HVAC system at normal daily start and stop times at minimum outside
airflow for occupied mode for duration of testing.

E. Number of Air Sampling Locations: Minimum of one per 25,000 cubic feet or for each
contiguous floor area, whichever is greater. Include areas with least ventilation and
greatest presumed source strength.

F. At each location, collect samples at 4 to 6 feet above floor over minimum 4 hour period.
G. Demonstrate that contaminant concentrations do not exceed following maximum concentration limits:

<table>
<thead>
<tr>
<th>Contaminant</th>
<th>Maximum Concentration Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon Dioxide *</td>
<td>10,300/ventilation rate</td>
</tr>
<tr>
<td>Carbon Monoxide</td>
<td>9 ppm and maximum 2 ppm above outdoor levels</td>
</tr>
<tr>
<td>Total Volatile Organic Compounds (TVOC)</td>
<td>Maximum 500 micrograms/cubic meter</td>
</tr>
<tr>
<td>Formaldehyde</td>
<td>Maximum 50 parts per billion</td>
</tr>
<tr>
<td>4-Phenylcyclohexene (4-PCH)</td>
<td>Maximum 6.5 micrograms/cubic meter</td>
</tr>
<tr>
<td>Other Individual VOC’s</td>
<td>Below odor and/or sensory irritation threshold and maximum 1/10 TLV</td>
</tr>
<tr>
<td>Total Aldehydes</td>
<td>Maximum 100 parts per billion</td>
</tr>
<tr>
<td>Total Particles</td>
<td>Maximum 50 micrograms/cubic meter</td>
</tr>
</tbody>
</table>

* Carbon dioxide monitoring is required only if building is occupied during testing. Ventilation rate is outdoor air requirement per person. Carbon dioxide measurement is differential between indoor and outdoor conditions, based on occupancy type as defined by ANSI/ASHRAE 62.1 and 62.2.

H. For each sampling location where maximum concentration limit is exceeded, conduct additional flush-out with outside air and retest specific contaminant until maximum concentration limit is achieved. Collect samples for retesting from original sampling location.

END OF SECTION
SECTION 01 91 00

COMMISSIONING

PART 1     GENERAL

1.01     DESCRIPTION

A. The systems installed under Divisions 21 through 28, as well as equipment provided under other divisions that connect to or interface with the systems of Divisions 21 through 28 will be evaluated, started and tested (commissioned) to ensure that each performs per the intent of the design and/or representations made relative to performance, efficiency and suitability for application in this project.

B. The Commissioning Authority (CxA) must be a completely independent third party, not affiliated either directly or indirectly with any of the designers, contractors, construction manager, or vendors on this project.

C. The Owner will employ an independent CxA. The CxA is an independent and knowledgeable third party, hired to verify that the systems work as intended. The CxA will inform the Owner, Construction Manager (CM) and/or the Architect/Engineer (A/E) of the results of the commissioning and provide suggestions, as necessary, to correct deficiencies in observed performance or installation and/or observed performance.

D. This project is implementing the requirements of the USGBC LEED® protocol.

E. Commissioning is the process to verify to the Owner that systems, equipment, mechanical, electrical, controls and special systems function together properly to meet performance requirements and design intent, and as described in the Contract Documents. The Contractor shall be responsible for participation in the commissioning process as outlined below and in references and attachments throughout the Contract Documents. The Contractor shall furnish labor and materials sufficient to meet all requirements of building commissioning under this contract.

F. Various sections in the Division 22, 23, and 26 Specifications outline the specific commissioning responsibilities of each Contractor for the division and also obligate the CM to coordinate and manage the commissioning responsibility of those subcontractors.

1.02     REQUIREMENTS INCLUDED

A. Duties of Contractor

B. Duties of CxA

C. Acceptance Procedures

D. Training and Instruction
1.03 RELATED SECTIONS

A. Section 229500 – Plumbing Systems Commissioning
B. Section 230800 – Mechanical Systems Commissioning
C. Section 239500 – Building Automation System Commissioning
D. Section 269500 – Electrical Systems Commissioning

1.04 TERMS

A. Acceptable Performance: A component or system being able to meet specified design parameters under actual load including satisfactory documented completion of all functional performance tests, control system trending and resolution of outstanding issues.

B. Basis of Design: The Basis of Design is the documentation provided by the design engineer documenting design decisions that were made to meet the design intent as defined by Owner. The Basis of Design describes the systems, components, conditions and methods to meet the design intent.

C. Commissioning Plan: The Commissioning Plan is prepared by the Owner’s CxA and defines the scope and format of the commissioning process and the responsibilities of all involved parties. The Commissioning Plan is provided to all commissioning team members to inform them of the intent and scope of the commissioning work to ensure inclusion in the project scope and to expedite the commissioning process.

D. Functional Performance Testing: That full range of checks and tests carried out to determine if all components, sub-systems, systems and interfaces between systems function in accordance with the Contract Documents. In this context, “function” includes all modes and sequences of control operation, all interlocks and conditional control responses and all specified responses to abnormal emergency conditions. The functional performance tests will be prepared by the CxA.

E. Commissioning: The process to assure the Owner that building equipment, controls and systems function together properly to meet design intent and performance requirements shown in a composite manner in the Contract Documents.

F. Project Communication Log: The purpose of this log is to provide a method for tracking and resolution of deficiencies discovered as a result of the commissioning process. This list also includes the current disposition of issues and the date of final resolution as confirmed by the CxA. Deficiencies are defined as those issues where products, execution or performance do not satisfy the Specifications and/or the design intent. The Project Communication Log will be created and managed by the CxA.

G. Pre-functional Test Checklist: Checklist is prepared by the CxA. Checklist shall be by system or equipment to verify installation and start-up of equipment is complete and
ready for functional testing. These documents require signature by the Contractor prior to continuing with the commissioning process.

1.05 DUTIES OF CONTRACTOR

A. Provide vendor information to the CxA as required to enhance the CxA’s understanding of contractor and vendor obligations and responsibilities, and as needed to benefit the commissioning effort.

B. Provide copies of all shop drawings, manufacturer’s literature, maintenance information or other information as may be needed for systems to be commissioned to the CxA.

C. Collect the information requested by CxA for development of a complete Commissioning Plan and functional tests and provide to the CxA. The Contractor shall review these documents and confirm in writing to the Owner, A/E and CxA any known areas of conflict or areas requiring clarifications.

D. Collect all proposed start-up and Pre-functional Test Checklist documentation and provide that information to the CxA.

E. Plan for and incorporate commissioning activities into the construction schedule.

F. Provide a fully operational system per Specifications, started, verified, debugged, calibrated, balanced, tested and under automatic control.

G. Notify CxA of Readiness of each system for startup and completion of pre-functional test checklists.

H. Notify CxA of readiness for functional testing.

I. Provide qualified personnel to complete the commissioning tests, including seasonal testing.

J. Coordinate and cooperate with the CxA’s personnel.

K. Provide access to site for the CxA for review, verification and testing activities.

L. Provide office space for CxA for preparation of daily reports.

M. Provide organized storage space for project drawings, Specifications, equipment and materials submittals, shop drawings and operation and maintenance manuals in the job site trailers or job site office space.

N. Provide updates to all project documentation to reflect all supplemental instructions, addenda or other revisions to the project construction documents. Updates and supplemental instructions must be posted to the master set of documentation for review and reference by all Contractors and for the CxA’s use.

O. Provide adequate time and resources to perform functional testing of systems to be commissioned in contract, as directed by the CxA.
P. Coordinate participation of the mechanical, electrical, controls and TAB subcontractors in the commissioning process.

Q. Provide CxA with submittals for all systems to be commissioned included controls system and wiring diagrams and narrative sequences of operation, in time for use in preparing the Functional Test Procedures.

R. Participate in any efforts to finalize sequences of operations with Owner, Designers and CxA.

S. Verify that coordination, installation, quality control and final testing have been completed such that installed systems and equipment comply with construction documents.

T. Review the Commissioning Plan, Project Communication Reports and test results and submit comments to the CxA.

U. In a timely manner, address issues identified during construction that may affect the commissioning process or final system performance.

V. Perform start-up and testing of mechanical and electrical equipment and systems and document as required with start-up reports and completion of Pre-functional Test Checklists. These checklists include installation documentation, start-up documentation, controls point-to-point documentation and calibration documentation, verification that controls sequence of operations meets design intent and TAB final documentation. Reports will be stored in the Contractor’s field trailer. Contractor will coordinate efforts to complete the pre-functional documentation.

W. Provide verification of testing of fire/smoke dampers and direct the resolution of deficiencies to CxA. Each damper and all functions of shall be tracked in a matrix spreadsheet.

X. Provide preliminary TAB report, indicating all actual field values recorded to the CxA, prior to initiation of functional testing. These reports shall be incorporated in the commissioning field notebook.

Y. Issue a written Notice of Readiness for each system to CxA upon completion of all systems work, start-up and Pre-functional Test Checklists requirements by trade contractors.

Z. Operate equipment and systems as required for functional performance testing. This includes, but is not limited to, manipulating the appropriate controls systems to execute the Functional Test Procedures.

AA. Participate in the fine-tuning or troubleshooting of system performance if either of these measures becomes necessary.

BB. Compensate CxA for retesting and/or troubleshooting time required by the CxA because Contractor’s systems do not meet specified performance. Back-charge Contractors as necessary to collect reimbursement for CxA compensation.
CC. Submit complete operation and maintenance information and as-built drawings to the CxA for verification, organization and distribution.

DD. Provide training for the systems specified.

EE. Contractors to advise the Construction Manager of work recommended that is not in the contract.

FF. Provide proprietary test equipment required to test all the systems and equipment in this project.

GG. Review operating and maintenance data for verification, organization, distribution and conformance to requirement of the Contract Documents.

1.06 DUTIES OF COMMISSIONING AUTHORITY

A. Become familiar with the design intent for the project and systems within.

B. Become familiar with the construction documents and requirements for this project.

C. Become familiar with the contractors, each major contractor’s scope of work, vendors, and other parties and business arrangements that may influence production of the project and the successful commissioning of the project.

D. Coordinate / perform all commissioning activities for the project. Specific duties include:

1. Serve as the Commissioning Authority on behalf of the Owner to ensure that the project intent is achieved for the systems being commissioned.
2. Review and comment on the Owner’s Project Requirements and the Basis of Design as provided by the design team.
3. Conduct a thorough review of the design during construction document development.
4. Conduct a final review of the construction documents as the near completion.
5. Develop a Commissioning Plan and use it to guide the commissioning process.
6. Write Pre-Functional Test Checklists and provide to contractors for completion.
7. Review the Contractor’s submittals relative to the systems to be commissioned and verify performance data, installation instructions, and programming/settings data.
8. Develop Functional Test Procedures from Contract Documents and final equipment submittals including narrative sequences of operation, control diagrams and software code for execution with the assistance of Contractor staff as required.
9. Provide ongoing documentation of the commissioning process, including letters with review comments, Project Communication Reports, and a Project Communication Log to track issues to resolution.
10. Perform site observations to follow installation progress and to verify system installation quality and readiness for testing. Verify compliance with design
intent, conformance with Contract Documents, and operation and maintenance access of equipment, valves, etc.

11. Direct and perform complete on-site functional testing of equipment and systems, as defined in the Commissioning Plan and Functional Test Procedures, to verify intended performance.

12. Provide technically qualified personnel when scheduled for the type of work to be commissioned.

13. Conduct and document commissioning meetings.

14. Verify proper maintenance staff and occupant training.

15. Develop a systems manual with diagrams and narratives to explain and provide guidance in the operation of the commissioned systems.

16. Provide a Final Commissioning Report to document the entire commissioning process.

17. Provide seasonal testing as required and an on-site, post-occupancy/warranty review of system operation and performance, within approximately ten (10) months of substantial completion.

E. Coordinate with CM, A/E and trade Contractors.

F. Provide technically qualified personnel when scheduled for the type of work to be commissioned.

G. Promptly notify CM, A/E and/or Contractors of irregularities or deficiencies of work which are observed during performance of services. Results to be reported to the Construction Manager to expedite resolution, to be followed and documented in Project Communication Reports, with one report per subject.

H. Observe or perform complete testing of all systems as defined in the Commissioning Plan and per the written functional test procedures. All testing shall be performed by the contractor and directed by the CxA.

I. CA is not authorized to:

1. Release, revoke, alter or expand requirements of Contract Documents.
2. Approve or accept any portion of the work.
3. Perform any duties of the Contractor.

J. Observe the start-up activities and initial testing of equipment and systems as required and review Contractor’s start-up documentation.

K. Observe or review documentation of validation activities including: Proper test and balance activities, rotating equipment drive alignment, vibration testing, acoustical testing, pipe pressure testing, duct leakage testing, electrical testing and functional tests for normal and off-normal operating sequences.

L. Review submittal of all required pre-functional and start-up documentation provided by Contractor for completeness and reasonableness. This includes installation documentation, start-up documentation, point-to-point checklists and preliminary TAB report, prior to initiation of functional testing.
M. Schedule functional testing activities in conjunction with the CM and overall project Schedule.

N. Witness and verify satisfactory completion of equipment and system tests and inter-systems functional performance tests.

O. Conduct and document commissioning meetings.

P. Provide site observation, functional tests or other project reports in a timely manner.

Q. Document inconsistencies or deficiencies in system operations and system compliance. System deficiencies shall be forwarded to the Owner’s Representative and documented in a Project Communication Log.

R. Coordinate via the CM the participation of Owner’s personnel with equipment, component and systems performance verification and participation in required training.

S. When commissioning has been successfully completed, recommend acceptance to the Owner.

T. Once all functional tests have been successfully completed and all outstanding issues resolved, the CxA will provide the Owner with a Final Commissioning Report of all commissioning activities that occurred during the project.

U. Provide the Owner with a systems manual that contains the information required for re-commissioning the building.

V. Near the end of the warranty period, the CxA will review building operation with the operation and maintenance staff and provide a plan for correction of any outstanding issues.

W. The CxA will formally communicate with the Contractor via approved project channels. It is expected, however, that informal communication and coordination will be conducted directly with the subcontractors; records of all contacts will be sent to the A/E through the normal channels.

X. Project Communication Reports to be issued to include description of the observation, status of the issue, and with recommendations to resolve any short comings. Additional communications to be tracked as supplements to the original report.

Y. Provide and maintain a Project Communication Report Log with status of resolved and unresolved commissioning issues.

Z. Review Operation and Maintenance Manuals for completeness and accuracy. The manuals include: technical literature for all equipment and systems actually installed; Repair and overhaul information; Parts lists; and Troubleshooting guidelines.

AA. The CxA will document the commissioning process in a Final Commissioning Report including: an Executive Summary, Project Communication Log, Project Communication Reports and supporting documentation, recommendations for additional work not in the original contract, and seasonal testing amendments.
BB. The CxA is not authorized to release, revoke, alter or expand requirements of Contract Documents, to approve or accept any portion of the work or to perform any duties of the Contractor.

1.07 CONSTRUCTION MANAGER’S RESPONSIBILITIES

A. Plan for and integrate commissioning activities into construction schedule.

B. Expedite Contractor’s efforts to finish work within scheduled time.

C. Provide CxA and test agency access to the equipment and systems to be tested.

D. Coordinate and manage Contractor’s efforts to perform functional testing and related commissioning activities on a timely basis.

E. Expedite Contractor’s efforts to resolve problem areas.

F. Provide office space for CxA for preparation of daily reports.

G. Provide organized storage space for project drawings, specifications, equipment and materials submittals, shop drawings and operation and maintenance manuals in the job site trailers or job site office space.

H. Provide updates to all project documentation to reflect all supplemental instructions, addenda or other revisions to the project construction documents. Updates and supplemental instructions must be posted to the master set of documentation for review and reference by all Contractors and for the CxA’s use.

I. Compensate CxA for the rescheduling of work, and/or excess retesting and/or troubleshooting time to resolve systems and/or equipment that does not meet specified performance, or due to contractor misrepresentation of completed work packages.

1.08 COMMISSIONING PLAN

A. The Commissioning Plan is a tool through which the commissioning process is described and incorporates the Owner, A/E, Contractor and CxA roles relative to the commissioning process. Commissioning team members are all contractors, subcontractors and design professionals whose participation is of benefit in the delivery of a fully functioning building to the Owner. The plan shall describe the communication, authority and responsibility of commissioning team members. The Commissioning Plan will include the following:

1. The purpose of commissioning
2. Detail the commissioning process
3. Commissioning team members responsibilities
4. Describe Installation Completion Matrix
5. Provide a guideline for acceptance of each piece of equipment or system
6. Systems to be commissioned
1.09  SYSTEMS TO BE COMMISSIONED

A. Building System Features:

1. The building’s mechanical features include a water cooled chiller for generation of chilled water, and a gas fired hot water boiler for heating water. Conditioned air is circulated through the building by an air handing unit (AHU) equipped with energy recovery and indirect evaporative cooling. The design utilizes displacement ventilation strategies with both passive and active chilled beams on the perimeter of the space, and in-slab radiant tubing. VAV Boxes distribute the air to the space. Restroom ventilation is provided by exhaust fans. Domestic hot water heaters provide hot water for the building. The electrical system features lighting controls for daylighting, occupancy and exterior illumination.

B. Systems and Equipment to Be Functionally Tested: The above system features are to be functionally tested and other building features will be evaluated for installation quality during construction. The functional performance testing will include the following systems and equipment:

1. Mechanical
   - Water Cooled Chillers
   - Pumps
   - Fan Coil Units
   - Air Handling Units
   - Building Pressurization Fans
   - Heat Exchangers
   - Split system Air Conditioner
   - In-Slab Radiant Tubing
   - Electric Steam Humidifier
   - Water Source Heat Pump
   - Radiator
   - Variable Air Volume Boxes
   - Passive and Active Chilled Beams
   - Exhaust Fans
   - Domestic Hot Water

2. Electrical System
3. Back-up Power System
4. Lighting Control System

1.10  COMMISSIONING ACTIVITIES

A. The Commissioning Schedule: This schedule defines the milestones and conditions that must be achieved before system testing and other commissioning activities can commence. The schedule also includes the expected duration of the various tasks so that the commissioning process can be incorporated into the overall construction schedule.
B. Preparation for Testing: To prepare for the system performance testing, the CxA will examine the design and Construction Documents, develop with appropriate Contractors Pre-functional test Checklist of construction responsibilities that must be completed prior to testing and develop detailed Functional Test Procedures and data forms.

Using the Pre-functional Test Checklist, the Contractor must verify that the systems they install are in compliance with the Construction Documents and are fully functional. Commissioning is not intended to be a testing or inspection function that replaces any of the Contractors’ obligations for testing and proof of performance. Functional testing will only begin when checklists are completed by the appropriate subcontractors, initialed, signed and returned to the CxA.

C. Functional Testing: Functional testing is performed by experienced and qualified technicians of the subcontractor as directed by the CxA and may be observed by other members of the commissioning team. Functional testing will verify proper sequencing, operation and performance of installed equipment and systems under realistic operating conditions. The functional testing will follow with written Functional Test Procedures with test results documented for permanent record.

D. Documentation: In addition to the Prefunctional Test Checklist and Functional Test Procedures, written documentation will be maintained for all other commissioning activities. Project communication reports shall be issued by the CxA to the Contractor and key members of the commissioning team to document apparent deficiencies identified during examination of design and construction documents, daily activities on-site, construction deficiencies and successful or unsuccessful functional test results. At the end of the commissioning process, all documentation will be assembled and summarized in the Final Commissioning Report.

E. Deficiency Resolution: When a Project Communication Report is issued to address an identified deficiency, the Contractor shall forward the reports to the appropriate parties to initiate corrective action in an expeditious manner. The designer is relied on for supplemental instructions or design modifications and issuance of final design details and the Contractors are relied on for implementation of that design. Change orders must be issued through proper contract channels.

1.11 FUNCTIONAL TEST PROCEDURES

A. The Functional Test Procedures include, but are not limited to, the following:

1. Verification of testing, adjusting and balancing performance.
2. Verification of all equipment’s ability to perform to the design intent.
3. Verification of the performance of subsystems consisting of combinations of equipment (i.e., refrigeration cycle, pumps and interconnecting piping).
4. Verification of the performance of the automatic controls in all seasonal modes.
5. Verification of the performance of the HVAC system as a whole.
6. Verification of the performance of all life safety devices and systems that interface with the HVAC systems.
PART 2     PRODUCTS

   Not used in this section.

PART 3     EXECUTION

3.01   GENERAL

   A. Operating equipment and systems shall be tested in presence of Owner’s CxA and A/E to demonstrate compliance with specified requirements.
      1. Notify Owner, in writing, seven (7) days prior to tests scheduled under requirements of this Section.
      2. Testing shall be conducted under specified design operating conditions as recommended or approved by Owner and A/E.

   B. Functional performance testing shall be completed and accepted by Owner as a condition of final completion.

   C. All elements of systems shall be tested to demonstrate that total systems satisfy all requirements of these Specifications. Testing shall be accomplished on hierarchical basis. Test each piece of equipment for proper operation, followed by each subsystem, followed by entire system, followed by entireties to other major systems.

   D. Proprietary test equipment required by the manufacturer, whether specified or not, shall be provided by the manufacturer of the equipment through the installing contractor. Manufacturer shall provide the test equipment, demonstrate its use, and assist the CxA in the commissioning process.

   E. Acceptance Documentation: A copy of the functional performance tests results shall be necessary acceptance documentation along with other specified requirements.

3.02   ACCEPTANCE PROCEDURES

   A. Prior to functional performance testing of each system, the CxA shall observe and verify that the physical installation of components and systems being tested is substantially installed in accordance with the Contract Documents.

   B. Contractor’s Tests
      1. System shall be checked for proper installation, shall be adjusted and calibrated to verify that it is ready to function as specified.
      2. All system elements shall be checked to verify that they have been installed properly and that all connections have been made correctly.
      3. All discrete elements and sub-systems shall be adjusted and checked for proper operation.
4. Start-up and operational tests shall be complete, with all required Installation Completion Matrix submitted for review by CxA within five (5) days of each activity, prior to starting functional performance testing.

C. Owner-witnessed Functional Tests

1. Objective of these tests is to demonstrate that system is operating and complying with specified performance requirements.
2. Owner-witnessed functional performance tests shall be performed on complete system. Each function shall be demonstrated to satisfaction of the Architect and Owner’s CxA on paragraph-by-paragraph basis of CxA’s written test procedure, developed to demonstrate conformance to requirements of the Specifications.
3. Functional performance tests shall be witnessed and endorsed by the CxA upon satisfactory completion.
4. Actual testing program shall be conducted in accordance with prior approved procedures and shall be documented as required herein.
5. Contractor shall notify Architect and Owner at least two (2) weeks prior to date of functional performance tests.

D. The functional performance testing process shall be accomplished for all equipment, subsystems, systems and system interfaces. All must be tested for acceptances and there shall be a separate checklist for each to ensure documentation specific to each is complete.

E. Each system shall be operated through all modes of system operation (for example, seasonal, occupied, unoccupied, warm-up, cool-down, etc., as applicable) including every individual interlock and conditional control logic, all control sequences, both full-load and part-load conditions and simulation of all abnormal conditions for which there is a specified system or controls response. The warm-up and cool-down test shall be a performance test.

F. Temporary upsets of systems, such as distribution fault, control loss, setpoint change, equilibrium upset and component failure, shall be imposed at different operation loads to determine system stability and recovery time.

G. When the functional performance of all individual systems has been proven, the interface or coordinated responses between systems shall be checked. The systems involved may be within the overall HVAC work or they may involve other systems, such as emergency systems for life safety.

H. Corrective Measures: If acceptable performance cannot be achieved, the cause of the deficiency will be identified. If it is determined that the deficiency was caused by the system or component not being installed per the manufacturer’s recommendations or Contract Documents, the necessary corrective measures shall be carried out by the Contractor. Every check or test for which acceptable performance was not achieved shall be repeated after the necessary corrective measures have been completed. This re-testing process should be repeated until acceptable performance is achieved. The Contractor will be allowed one retest after initial testing of the equipment. If the retest
fails the Contractor shall be financially responsible, at standard rates, to reimburse the CxA for the additional time taken to achieve acceptable performance.

3.03 TRAINING AND INSTRUCTION

A. Training and instruction of Owner personnel is a part of the commissioning process and essential for the proper operation of the facility. The Owner’s operation and maintenance personnel will be formally trained in classroom sessions at the completion of the project. The CxA will facilitate this operation and maintenance training including approval of the training schedule. The contractors and vendors providing the training will complete training plans and submit to the CxA for review and approval in conjunction with the Owner’s representative.

END OF SECTION